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# GEOGRAPHICAL VARIATION IN BIRDS OF JAVA

G. F. MEES

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# **GEOGRAPHICAL VARIATION IN BIRDS OF JAVA**



PUBLICATIONS OF THE NUTTALL ORNITHOLOGICAL CLUB, NO. 26  
Editor, Raymond A. Paynter, Jr.

# GEOGRAPHICAL VARIATION IN BIRDS OF JAVA

G. F. MEES

Die Rassengliederung innerhalb Javas legt . . . die Frage nahe, ob die langgestreckte Insel überhaupt als eine tiergeographische Einheit aufzufassen ist (Rensch, 1936:98).



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# 1

## INTRODUCTION

Java is a long and narrow island with a surface area of 126,650 km<sup>2</sup> (excluding the satellite island of Madura); it is almost 1,100 km long, its width in the central part being less than 100 km. A further feature of the island is the presence of a chain of volcanoes and other high mountains which form its backbone, but which are widely spaced, separated by lower valleys and hills. Such a topography is almost ideal for the development of geographical variation in birds. In the lowlands it is because east-west the populations are separated by distance and north-south it is because they are separated by mountains; in the mountains it is because they are separated by lowlands (and by distance).

The existence of geographical variation in a number of bird species in Java, both lowland and montane, has been recognized for a long time; many species have accordingly been divided into subspecies, the maximum being five for a high-mountain species in which isolation is extreme.

Unfortunately, in many cases the study of geographical variation of birds on Java stopped where it should have started, with the description of a (supposedly) new subspecies, based on inadequate material from a single locality. A few authors, notably Dammerman (1929), Chasen (1935), Rensch (1936), and Voous (1948), have gone a step further and have discussed the avifauna of Java from a zoogeographical viewpoint. Hitherto no pattern has become apparent in the geographical variation, and in several instances the supposed variation is still in need of confirmation.

Over the past forty years I have on several occasions studied and described geographical variation of single species on Java in a haphazard fashion, as a byproduct of other studies. The time seems ripe now for a more comprehensive account of geographical variation. To this end I have examined all polytypic birds from Java. In this paper I have tried to evaluate this variation. It is only a first, but necessary, step to its understanding.

In the following pages only this one aspect of the ornithogeography of Java will be discussed. There are others, such as the horizontal and vertical distribution of birds in the island, which are equally fascinating. The horizontal distribution was treated by Dammerman (1929: 9) who drew attention to the fact that more resident birds had been recorded from West Java than from Central and East Java. He was aware that much of the difference might be due to West Java being better known, and only cautiously formulated the suggestion that there was "an

indication that, as is also the case with other groups of animals, there is among the birds also a decline of the species in passing from west to east." Subsequent ornithological work in East Java, mainly by Kooiman (1940), indeed resulted in the discovery of many species previously known only from the more westerly parts of the island. Chasen (1935: xiii) discussed the point also, and concluded that "There seems to be a slight reduction in the number of species correlated with longitude, fewer species being represented in the west." The very common error of confusing east and west may be assumed to have been made here, otherwise this conclusion is incomprehensible. Delacour (1947: 16) failed to pick up the error and perpetuated it. Mayr (1944: 130) came with the following, "It is well known that the elongated islands of the Lesser Sunda chain show considerable faunistic differences between their eastern and western districts. Java is a striking example of this phenomenon. Of its 340 species of breeding birds, about 80 are restricted to the western half of the island, and probably less than 200 reach the easternmost district." This certainly is a gross exaggeration of the difference. In this connection it should be recalled that there are also some species confined to the eastern part of Java (*Bradypterus montis* and *Pachycephala fulvotincta* come to mind). It is surprising to see Java quoted by Mayr as a typical example of the Lesser Sunda Islands for, of course, geographically it belongs to the Greater Sunda Islands.

As regards the vertical distribution, there is Hoogerwerf's (1948a) important paper. In many regions a difference in size has been shown to exist in birds with a large vertical distribution, those from the higher levels being larger (conforming to Bergmann's Rule). In Java the matter has received hardly any attention and the one published example (*Zoothera citrina*, cf., Jany, 1953b) is dubious, so that there remains an open field for investigation.

It is an obvious fact that a paper like the present one can only be written about an avifauna that is reasonably well-known in at least two aspects, viz., distribution and geographical variation. The quality of its conclusions depends on the quality and quantity of the available material, especially on the geographical spread of the material. In addition, of course, reliable literature records are needed. At first sight it would seem that Java scores high on these conditions. Serious study of its avifauna began before the end of the 18th century (von Wurmb), and following the researches of Horsfield, Reinwardt, and members of the Natuurkundige Commissie in the first quarter of the 19th century, it was thought, early in the last century, that Java was ornithologically almost as well-known as western Europe. This was in a period of crude inventorying, before an interest in the finer points of geographical variation and of local distribution developed. This means also that much of the material collected in this early period, as far as it still exists, is of limited use for the purposes of the present paper, lacking essential information, such as the date and locality of collecting. In the course of this study I have been made aware of how

insufficiently and patchily Java is known ornithologically. Almost all major museums have bird collections from Java, but in these collections there is a heavy emphasis on a limited region of West Java, particularly the surroundings of Buitenzorg/Bogor and Mts. Pangerango-Gedeh. Other parts of Java are far less well-known. This is especially true for Middle Java and the western part of East Java. There is the ridiculous, if not actually shameful fact that Mt. Merbaboe, one of the important volcanoes of Java (3,142 m) and type locality of several species of mountain birds collected there by Horsfield in 1804 (*Pomatorhinus montanus*, *Turdus poliocephalus javanicus*, *Lophozosterops javanica*?), has never again been visited by an ornithologist. The type specimen of *Scolopax saturata*, obtained by Horsfield on Mt. Prahoe, remains the only one of its species recorded from anywhere east of West Java, as I mentioned elsewhere (Mees, 1989: 374). Mt. Wilis (2,550 m), an important link in the chain of volcanoes across Java, is ornithologically unknown. The same can be said of the adjacent link, Mt. Kawi, of which ornithological knowledge is confined to a casual observation of *Turdus poliocephalus* by a visiting botanist, which suggests the presence of a full mountain fauna. With the lowlands it is no better. For example, the "Vorstenlanden," the sultanates of Middle Java, are ornithologically almost unknown. True, Horsfield lived for several years in Soerakarta, but his labelling was generally too vague to pinpoint what he observed and collected there. It may be assumed that the Sparrow Hawk, *Accipiter soloensis*, described by Horsfield, was collected in Solo. Since Horsfield only van Dedem (1912) has collected perhaps ten specimens in Soerakarta (Delangoe, about halfway between Soerakarta and Klaten, and near Klaten). The Sultanate of Djokjakarta is completely unknown; to my knowledge not a single bird has ever been collected there for scientific purposes. A peculiar example is also the island of Madura/Madoera, which is zoogeographically a part of Java, from which it is at present separated by a very shallow sea strait less than two kilometers wide. No serious bird study has been done on Madura, although I have seen the odd specimen collected in the last century by A. B. Meyer (one only?—see *Sturnus melanopterus*), and A. G. Vorderman. Admittedly, the island with a maximum elevation of 470 m and its dense human population does not look promising to the ornithologist, which is of course the reason why it has been so totally neglected.

The distribution maps presented herein speak mostly for themselves; they confirm what is said above, viz., that from the critical areas where meeting or intergradation of related forms may be expected, the available material is often insufficient. The maps are mainly based on material personally examined, and only when they extend the distributions as known on that basis have I added literature records. This means that in the case of common and widely distributed forms, no attempt has been made to list all additional localities mentioned in the literature.

It should be clear that this work is not an attempt at a comprehensive biogeography, or even an ornithogeography, of Java. For that the whole avifauna of Java would have to be studied in relation to surrounding islands, and comparisons with other groups of animals would have to be made. The present paper does not contribute more than a building stone to that, although I consider it to be an essential one.

# 2

## TOPOGRAPHY

The mainland of Java extends in the tropics south of the equator over a length of more than nine degrees, from  $105^{\circ}08'$  E (Java's Eerste Punt, the western tip of Udjung Kulon) to  $114^{\circ}37'$  E (the eastern tip of the Blambangan peninsula), ca. 1,035 km (Fig. 1). The actual length of Java, the shortest distance between the two tips, is somewhat greater, ca. 1,060 km. The latitude is much more confined, from  $5^{\circ}52'$  S at the northwestern end (St. Nicolaaspunt/Tanjung Pujut), to  $8^{\circ}46'$  S at the southeastern end (Tandjong Banten), less than three degrees. The orientation of the island is therefore west-east, its axis having only a slight tilt toward the northwest and southeast.

Java is a high and volcanic island. All its major mountains are volcanoes, many of them active. Going from west to east the following mountains attain a height of over 2,000 m.

**West Java:** Salak (2,216 m), Pangerango-Gedeh (3,016 m, 2961 m), Patotoeha (2,434 m), Tiloe (2,040 m), Boerangrang (2,062 m), Tangkoeban Prahoe (2,076 m), Wajang (2,182 m), Kantjana (2,182 m), Malabar (2,321 m), Boekit Toengoel (2,209 m), Kendang (2,608 m), Papandajan (2,660 m), Goentoer (2,249 m), Tjikoyeraj (2,821 m), Bongkok (2,144 m), Telagabodas-Galoenggoeng (2,201 m, 2,168 m), Tjerimai (3,077 m).

**Middle Java:** Slamat (3,432 m), Prahoe-Bisma (2,565 m, 2,364 m), Soembing-Sindoro (3,371 m, 3,151 m), Oengaran (2,050 m), Merbaboe (3,142 m), Merapi (2,314 m).

**East Java:** Lawoe, on the border of Middle Java and East Java (3,269 m), Wilis (2,550 m), Kawi (2,873 m), Adjasmoro-Welirang-Ardjoeno (2,282 m, 3,159 m, 3,348 m), Semeroe (3,676 m), Tengger Highlands (2,610 m), Ijang Highlands (2,947 m), Idjen Highlands with Raoeng (3,332 m) and Merapi (2,600 m).

The preceding enumeration shows that West Java has the most extensive highlands (area over 2,000 m), but that the highest mountains are in Middle and East Java, the Semeroe, reaching 3,676 m being the highest (Fig. 2). All these mountains may be said to belong to the main chain, but two mountains, although of only moderate height, deserve special mention as being separate from the chain, viz., Mt. Karang (1,775 m) in northwest Bantam and Mt. Moerjo (1,609 m) in Koedoes, Middle Java.

The area of Java is given in various publications as ca. 130,000 km<sup>2</sup>. This would be the surface in a flat projection. Because of the mountainous character of the island, the actual surface is greater and through the great fertility of the soil

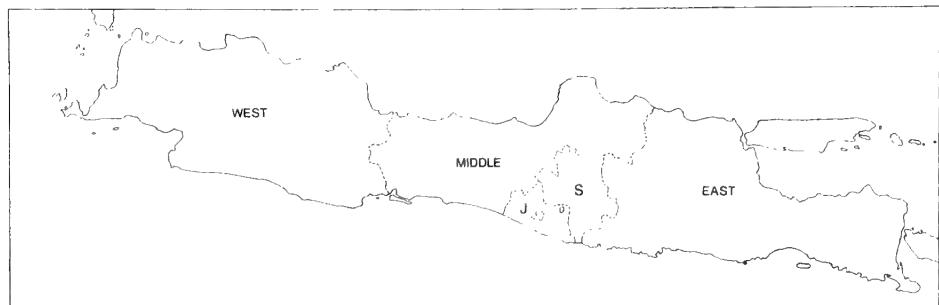


Fig. 1. Political divisions of Java, the provinces West, Middle, and East, and the Sultanates (S = Soerakarta; J = Yogyakarta); the latter have now been abolished and incorporated into the province of Middle Java.

and the dense human population, this increased area, compared with the flat surface, is by no means economically negligible. For birds also, the true area would be of more relevance than the flat surface. Therefore, I tried to obtain information about this point; I did not expect an exact figure, as for my purpose a general statement, such as that the increase was in the order of, say, 10 percent, would have been enough. To my surprise and disappointment, this information could not be provided by the obvious sources to which I applied. Nor could my questions of how much area there is above 1,000 m (a good lower limit for many mountain birds), and above 2,000 m, be answered. Even obtaining, one would assume, a fact as simple as the flat surface area of Java proved difficult. Because of certain discrepancies in the literature, I attempted to obtain an updated figure, but in vain. Naturally, one is tempted just to copy such a figure from some older publication, or an encyclopaedia, on the assumption that this would be, at least approximately, correct. How cautious one must be with accepting published figures was brought home to me when I looked up those given by Van Marle and Voous (1988: 14), viz., Sumatra 434,000 km<sup>2</sup>, Java 48,800 km<sup>2</sup>, and Celebes

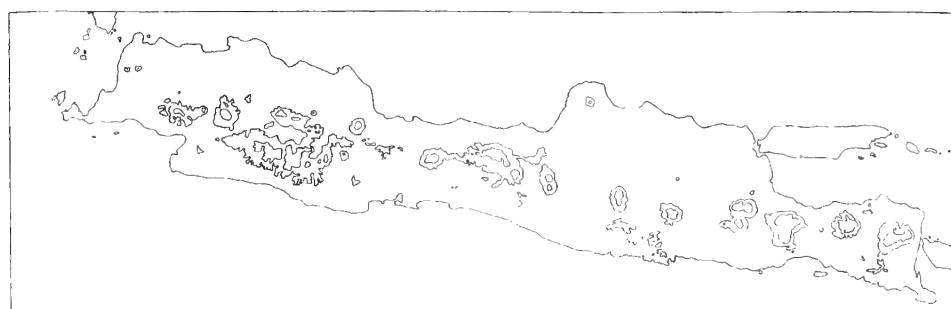


Fig. 2. Outline of Java, with contours of 750 m and 1,500 m.

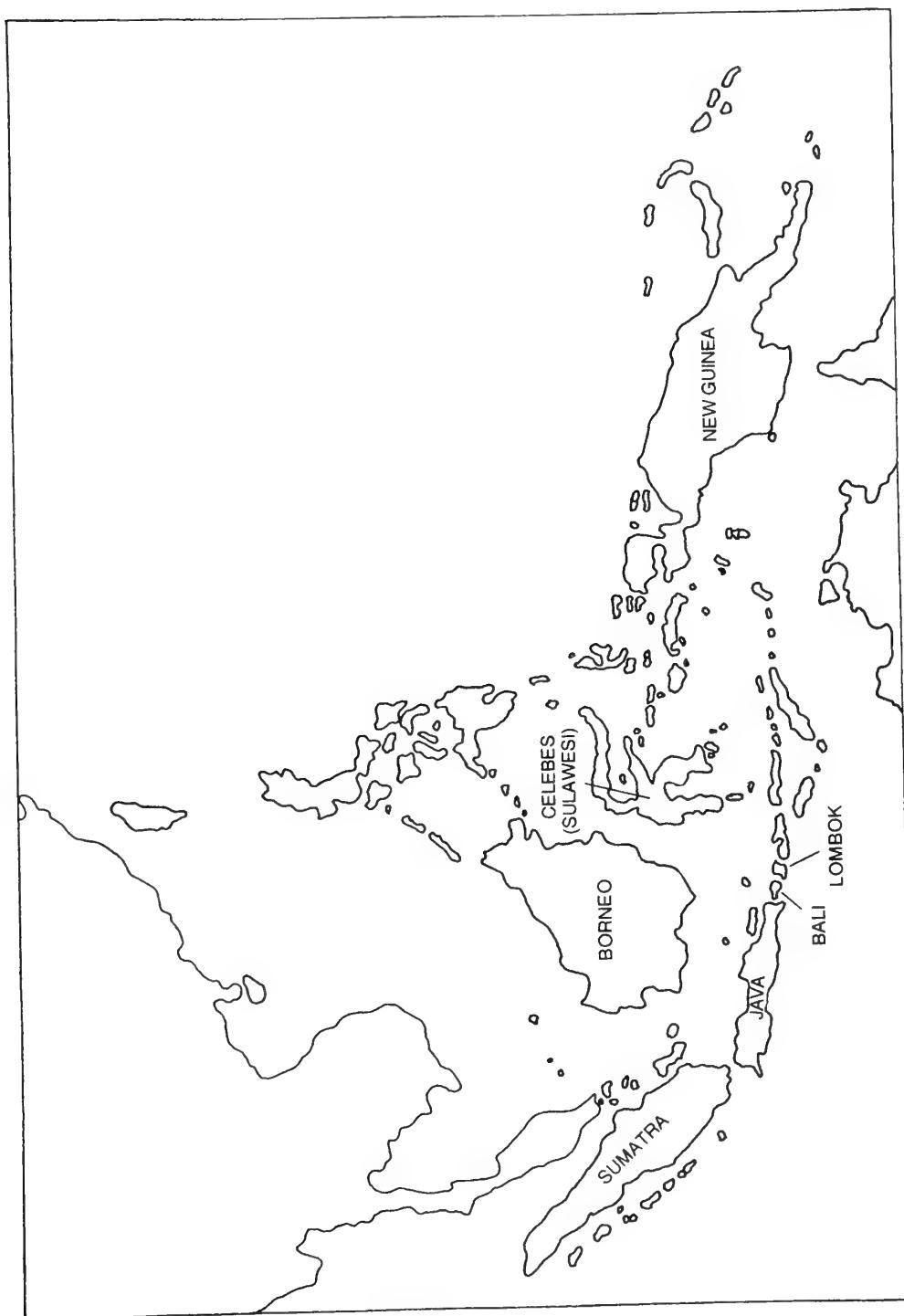


Fig. 3. The position of Java in relation to Sumatra, Borneo, Bali (all four on the Sunda Shelf), and the other Lesser Sunda Islands.

73,000 km<sup>2</sup>. Sumatra is not too far off, but the figures given for Java and Celebes are completely incomprehensible.

Small discrepancies in published figures might be due to the exclusion of some of the smaller offshore islands or to their inclusion with the main island. And there is every reason for suspicion when one sees the surface of a large island like Sumatra, with extensive areas of mangroves and mudflats, given precisely to the last hectare. For Java I accept 126,650 km<sup>2</sup> as approximately correct, with the satellite island of Madura, politically and geographically almost always treated as a part of Java, another 4,700 km<sup>2</sup>. Java is the smallest of the four Greater Sunda Islands, which consist of Borneo (737,018 km<sup>2</sup>), Sumatra (424,979 km<sup>2</sup>), Celebes (189,035 km<sup>2</sup>), and Java with Madura (131,350 km<sup>2</sup>). These figures have been taken from the *Atlas der physischen Geographie* (1971) and may be about right. Why I mistrust the last two or three digits in (for example) the figure for Sumatra has been explained above.

Java is the second largest (after Sumatra) of a chain of mostly strongly volcanic islands, extending from the Bay of Bengal southeastward and eastward over Sumatra, Java, and the Lesser Sunda Islands to the Banda Sea (Fig. 3). The most westerly of the Lesser Sunda Islands, closely adjacent to Java, is Bali (5,561 km<sup>2</sup>). Its avifauna is closely related to that of Java and will be repeatedly referred to in the following pages. For the understanding of its zoogeography, it is important to know that Java is situated on the Sunda Shelf, and that during the last period of Pleistocene low sea level (the last Ice Age), until less than 15,000 years B. P., the shallow Java Sea was land. The Sunda Shelf, with Sumatra, Bangka, Billiton, Borneo, Java, Bali, and some minor islands, formed an extension of the southeast Asian mainland. This means that until fairly recently, there were no water barriers separating the faunas of these islands.

# 3

## MATERIAL

This paper is based primarily on the collections of the Rijksmuseum van Natuurlijke Historie (RMNH) in Leiden, which probably has the largest bird collections from Java in existence. Dates of collecting range from ca. 1820 (C. G. C. Reinwardt, H. Kuhl, and J. C. van Hasselt) to ca. 1957 (M. M. J. van Balgooy). Major contributors were also H. Boie, S. Müller, E. Lauthier, A. G. Vorderman, M. E. G. Bartels, F. K. Baron van Dedem, E. Jacobson, H. W. van der Weele, Jhr. W. C. van Heurn, Jhr. F. C. van Heurn, H. J. V. Sody, F. A. Th. J. Verbeek, M. Bartels, Jr., J. Verwey, J. G. Kooiman, and J. H. Becking. A. Hoogerwerf donated paratypes of subspecies described by him in the nineteen sixties. The Bartels collection alone totals over 14,000 specimens, remarkable for their quality. Although the material contributed by other collectors is by no means negligible, it is mainly the Bartels collection that has enabled me to write the present paper.

The Zoologisch Museum in Amsterdam (ZMA) has the Rosier collection (Voous, 1948), not large, but important for its localities. In addition, there is material obtained by some of the above-mentioned collectors, that has been received with the private collections bequeathed by R. C. E. G. J. Baron Snouck-aert van Schaburg, J. G. van Marle, etc.

A large collection from Java is in the United States National Museum (USNM), collected in 1909/1910 by O. Bryant and W. Palmer. Originally this collection consisted of several thousand specimens but a number of these, after being catalogued, were returned to Bryant; their subsequent fate has not been traced. Apart from the description of a few subspecies from it (*Sauvagesia chloris palmeri* Oberholser, 1919; *Excalfactoria chinensis palmeri* Riley, 1919; *Aethopyga siparaja heliogona* Oberholser, 1923; *Accipiter trivirgatus javanicus* Mayr, 1949), this large collection remains unpublished. Through the courtesy of J. Dean I received relevant data from it. For the present purpose, however, the value of this important collection is limited, as it originates entirely from the western half of West Java, and mostly from well-known localities such as Batavia, Depok, Buitenzorg, Mt. Salak (Goenoeng Boender), Mt. Pangerango-Gedeh, although there is some material from northern and western Bantam.

Information on material in the collections of the Museum Zoologicum Bogoriense (MZB) was received from S. Somadikarta.

I have no illusions about the present status of the avifauna of Java. The island is seriously overpopulated, with the population density in 1990 estimated to be a stunning 814/km<sup>2</sup>. Most of the lowland and mid-mountain forest, as well as the

mangrove habitat, has been destroyed, so that birds dependent on these habitats, which until recently might have had a continuous range, have now a fragmented distribution. In addition, there is the serious problem of bird-trapping, from which especially good songsters suffer. A species discussed in this article, *Copsychus malabaricus*, has the misfortune of being confined to lowland forest, as well as being an excellent songster; its prospects of survival are dim. This means that much of the present work may have historical rather than current value. On the other hand, species inhabiting the higher mountain levels (a large proportion of those discussed here) are likely to be less affected, and the same pertains, of course, to species of cultivated country and secondary vegetation.

# 4

## CRITERIA FOR SUBSPECIES

In a previous publication (Mees, 1986: 20) I commented on the somewhat doubtful validity of many subspecies described in the first half of this century from the Malaysian region. It may seem unkind and unnecessary to keep harping on a point that has already been made. However, this paper is about geographical variation and subspecies, and these cannot be meaningfully discussed, when the criteria for recognition and rejection of subspecies are not defined first. It is quite obvious that, to our direct predecessors, average differences qualified for expression in nomenclature. This was not only the opinion of Oberholser, but also of the leading ornithologists of their time, like Stresemann and Chasen, who based many subspecific names on average differences.

The criteria I apply here will be stricter. Average differences will be described and discussed, but normally I would not accept subspecies as distinct unless at least some 75-80% of individuals are distinguishable from all individuals of the morphologically nearest subspecies. The word "normally" has been added, because in a few instances I will accept subspecies which do not fulfill the above condition, but which for zoogeographical reasons qualify for recognition. An example in the present paper is *Lophozosterops javanica*; the subspecies *frontalis* and *elongata* are very similar but their ranges are separated by the nominate race, which differs clearly from both.

Rules like the "75%" or "90%" rule, although theoretically admirable, have the drawback that they are entirely theoretical. In practice it will only very rarely be that samples available to the systematist are so large that it is at all meaningful to speak of percentages when comparing specimens of one population with those of another. As soon as one of the two series falls below a full 100 specimens, percentage figures rapidly lose meaning. Even if one has these large numbers, they usually include both sexes, as well as specimens in juvenile and immature plumage, and subspecific differences might be confined to one of these categories. For example, what is the good of giving percentages when one has for comparison one adult male and two immature females of one population, and a juvenile male and two adult females of the other?



# 5

## SPECIES ACCOUNTS

### CHESTNUT-BELLIED PARTRIDGE

*Arborophila javanica*

*Tetrao javanicus* Gmelin, 1789, Syst. Nat. (ed. 13), Vol.1, p. 761—  
Java.

*Perdix orientalis* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**:184—  
Java = the elevated woods of the Province of Blambangan, near the  
eastern extremity of Java (cf., Horsfield, 1824).

*Arborophila javanica bartelsi* Siebers, 1929, Treubia, **11**:149—  
G. Tjerimai, 2,500 m.

*Arborophila brunneopectus lawuana* Bartels, Jr., 1938, Treubia, **16**:  
321—G. Lawoe, ca. 2,000 m.

### Material Examined

**West Java** (nominate *javanica*): G. Salak (1), Halimoen (1), Pangerango (34, some of which are pulli), Tjibodas-Gedeh (1), G. Missigit (1), near Tjiharoës (1), Tjinjiroean (1).

**Eastern West Java and Central Java** (“*bartelsi*” = nominate *javanica*): Tjerimai (1, type of *bartelsi*), Kaligoea-Slamat (2).

**Western East Java** (*lawuana*): G. Lawoe (6, including the type of the subspecies).

**East Java** (*orientalis*): G. Idjen (1), Raoeng (5).

In addition, 7 specimens of *A. “orientalis” sumatrana*, and 3 of *A. “orientalis” rolli* were available for comparison.

There is still controversy about the exact status of the forms of this mountain partridge from Java and Sumatra. The problem may be briefly stated as follows: either all birds from Java belong to a single, strongly polytypic species (which further extends into mainland southeast Asia; cf., Chasen, 1935, etc.) or *A. javanica* should be kept as a separate species from the well-differentiated *A. orientalis* of eastern Java, the forms inhabiting Sumatra and Malaya being subspecies of *orientalis* (Fig. 4) This is the more recent view (Delacour, 1946; Davison, 1982). The zoogeographical and historical implications of the two different opinions are evident. In the first one, all the diverse forms have, or may

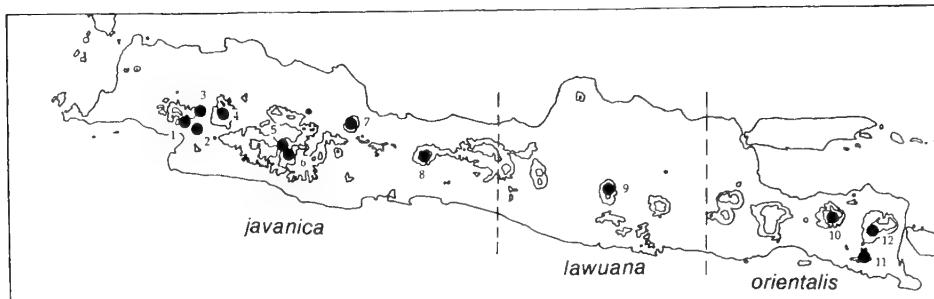


Fig. 4. Ranges of *Arborophila javanica* and *Arborophila orientalis*. *A. j. javanica*: 1. Halimoen; 2. G. Missigit; 3. Salak; 4. Pangerango-Gedeh; 5. Tjinjiroean, Malabar; 6. Tjiharoës; 7. Tjerimai, 8. Kaligoea, Slamat. *A. j. lawuana*: 9. Lawoe. *A. orientalis*: 10. Ijang Highlands; 11. Meru-Betiri; 12. Idjen Highlands.

have, originated in situ as the result of a single colonization. The second opinion requires a much more complicated history, with at least two colonizations of Java. To quote from Davison, “*A. javanica* is probably the relict of a first invasion southwards into the Sunda subregion. . . . If this were the first invasion of a series, it would not have involved movement through the habitat of congeners to arrive in the Upper Montane zone of Java.” *A. orientalis* [sensu Davison] would originate from a much later invasion from southeast Asia. The problem of movement through the habitat of congeners cannot in this case be avoided. In Sumatra *A. orientalis* might be thought to have replaced ancestral *A. javanica*, but how nominate *A. orientalis* could have reached East Java without touching the populations of *A. javanica* in West and Central Java remains unexplained and cannot be explained by Davison’s hypothesis. Nevertheless, the distribution of some mountain birds (the *Seicercus montis/S. grammiceps* group comes to mind) shows that the second, more complicated, option should not be automatically rejected, and deserves at least some consideration. Just the same, the first one is very much more likely. Therefore, the question can be formulated as follows, is the morphological evidence for uniting *orientalis* with the forms from Sumatra, and excluding *javanica*, as suggested by Peters (1934: 101) and Davison (1982) really so convincing that it must override the zoogeographical/historical arguments? Unfortunately, Davison does not give much help. He discusses the forms he unites in *orientalis* and places *javanica* in a different subgroup of species from *orientalis*, thus emphasizing their differences. On a later page, under the heading “Convergent evolution,” he elaborates on this. “In Java, *A. orientalis* and *A. javanica* belong to different Grey-breasted groups. Although the colours of their underparts are very distinctive. . . . their upperparts are very similar. In both the mantle, scapulars, and wing coverts are boldly marked with rufous chestnut and black, more heavily barred than any other species of *Arborophila*.

and the back and rump are again greyer, darker and much more heavily barred than in other species. This similarity may reflect some advantage in such colouring for camouflage in the particular forest type available in Java, for in the Sumatran and Malay Peninsular subspecies of *A. orientalis* this colouring is much less pronounced."

Apart from the fact that some of his observations conflict with mine, for *orientalis* is not heavily barred on the upperparts, whereas *sumatrana* is, I miss here any mention of the possibility that the noted similarity would be due, not to convergence, but to historical relationship, and thus support the first, not the second hypothesis of their history.

These birds have a complicated color-pattern, which is difficult to describe succinctly, and also considerable individual variation. Therefore, I refer to the illustrations (Figs. 5, 6, 7, 8) for a general idea of their appearance, and will here mention mostly those characters which show geographical variation.

***A. j. javanica*:** Forehead, ear coverts, chin, throat, and two dots on the sides of the black neck, light chestnut (the ear coverts usually paler); pileum brownish with a variable amount of black spotting, mostly not very conspicuous; sides of the head, neck, and lower part of the throat black (especially on the throat this black can vary greatly; in some individuals the throat is almost entirely black, in others it is light chestnut, with only a posterior margin black). Upperparts behind head and neck heavily barred black and grey. Breast slate, usually with a slight brownish tinge, as the feathers have frequently, but not always, vague brown margins (their absence is probably a matter of wear); lower underparts deep chestnut; margins of wing feathers chestnut. Flanks plain chestnut, without markings.

***A. j. bartelsi*:** The three characters given for this subspecies, as compared with nominate *javanica*, were: darker brown underparts, especially flanks; the black bars of the upperparts broader, hence the upper surface darker, and the pileum grey-brown, not reddish. With the qualification that I have seen only three specimens, my conclusion is that neither of these characters is tenable. Note that Bartels (1938b), on the basis of more material, arrived at the same conclusion. *A. j. bartelsi* is a synonym of *A. j. javanica*. The nominate subspecies, as thus expanded, is widely distributed in the highlands of West Java, and ranges eastward to Mt. Slamat in western Middle Java.

***A. j. lawuana*:** Pileum with more and larger black spots than in the nominate race; the black band above and behind the eye is, however, reduced to a narrow line, the region above and behind the eyes being chestnut, continuous with the chestnut of the forehead; the black neck band lacks the two light chestnut dots; upperparts less heavily barred, the black bars narrower; lower underparts deep chestnut, matched only by the darkest specimens of *javanica*; the grey (slate) feathers of the breast have vague brown margins as in *javanica*, so that the breast looks slightly brownish grey rather than pure grey. This subspecies is known only from Mt. Lawoe.

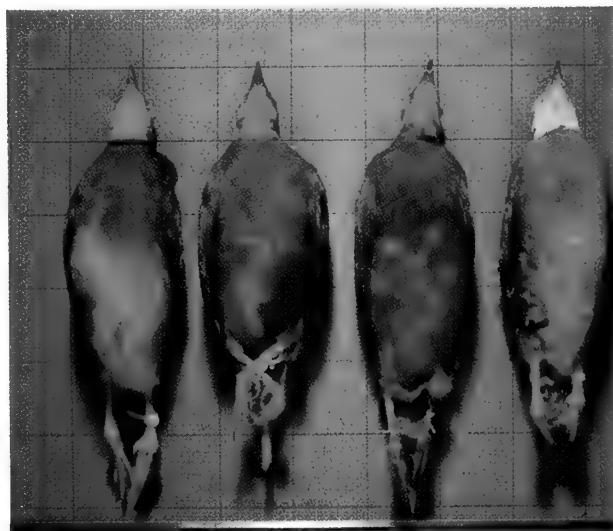
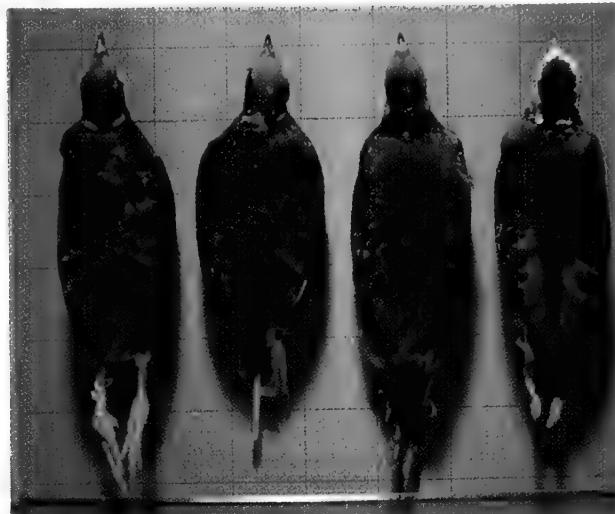


Fig. 5. *Arborophila* from Java. Top, dorsal aspect. From left to right: *A. j. javanica* (♂, 22 X 1925, Tjiharoës, RMNH no. 29847), *A. j. javanica* (♂, 31 V 1928, Tjerimai, RMNH no. 14027, type of "bartelsi"), *A. j. lawuana* (♂, 15 VI 1938, Lawoe, RMNH no. 29803), *A. orientalis* (♂, 18 XI 1917, Soember Wringin, Idjen, RMNH no. 29850). Bottom, ventral aspect; same specimens and relative positions.

***A. orientalis*:** Strikingly different from the preceding forms in that the chestnut color is confined to the margins of the wing feathers. Forehead, supercilium, sides of the head, chin, throat, and lower underparts are not chestnut but white; pileum entirely black, or its anterior part still brownish, heavily spotted with black, its posterior part black; upperparts behind the head and neck only weakly barred or almost plain, more strongly barred (as in *javanica* and *lawuana*) on the lower rump. Breast grey, a trifle lighter than in the preceding forms, without brown. Feathers of the flanks with broad black subterminal bars, followed by a pale buffy or greyish tip, and contrasting with a white bar or central spot which precedes it; basal part of the feathers light grey. Although all the available mate-



Fig. 6. Heads of *Arborophila* from Java in lateral view. From left to right: *A. j. javanica* (RMNH no. 29847), *A. j. lawuana* (RMNH no. 29803), *A. orientalis* (RMNH no. 29850).

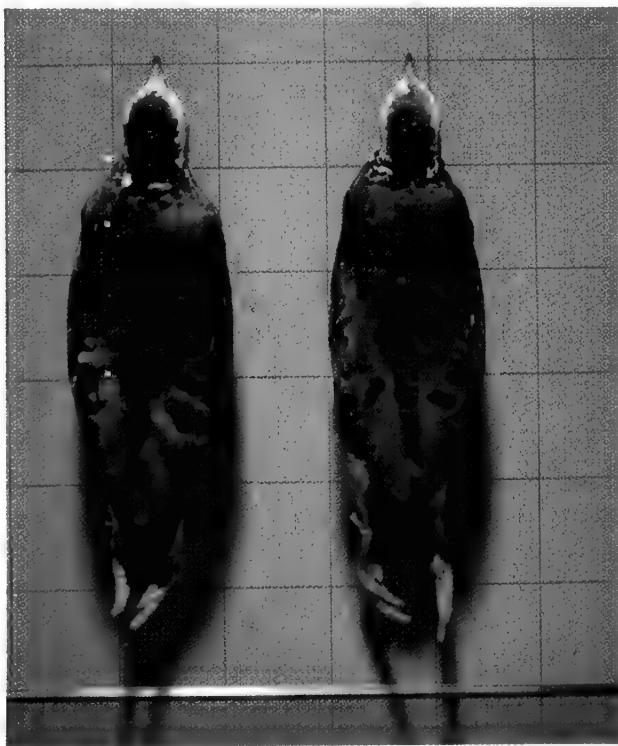


Fig. 7. *Arborophila orientalis* in dorsal aspect. Left: ♂ (18 XI 1917, Soember Wringin, Idjen, RMNH no. 29850). Right: ♀ (17 XI 1917, Soember Wringin, Idjen, RMNH no. 29849). Showing the extremes of variation in barring of the upperparts in a small series from one locality.

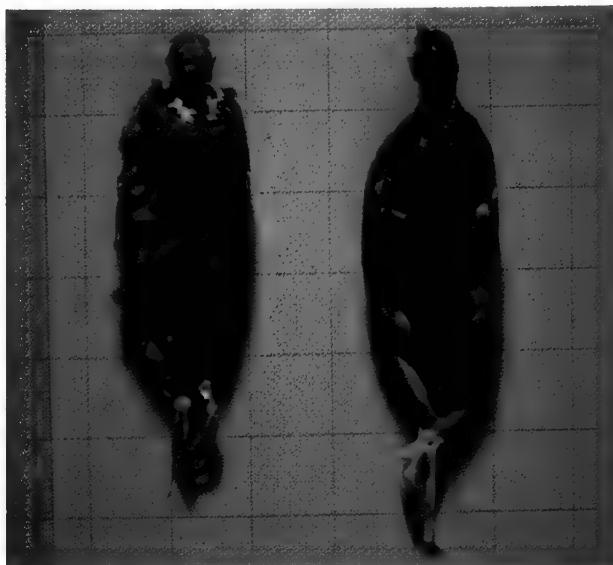


Fig. 8. *Arborophila* from Sumatra. Left: *A. rolli* (♂, 27 VII 1930, Redelong, North Sumatra, RMNH no. 10275). Right: *A. sumatrana* (♂, 4 I 1919, Palembang Residency, South Sumatra, RMNH no. 5245).

rial is from the Idjen Highlands, it has also been recorded (but to the best of my knowledge, never collected), in the Ijang Highlands (Kooiman and van der Veen, 1936; Kooiman, 1941) and Meru-Betiri (Van Balen, 1992)

***A. sumatrana:*** A large bare space around each eye; feathers of the head mostly black; those of the pileum with some inconspicuous chestnut markings (as bases, bars, or margins); ear coverts white; chin and throat blackish grey, the feather bases pale grey; underparts from the upper breast downward mostly grey (darker and purer than in *A. orientalis*); middle of the belly and vent white; flanks heavily barred with black and white; upperparts, from the lower neck backward, heavily barred chestnut and black.

***A. rolli:*** A large bare space around the eye; feathers of the crown mostly sepia brown, heavily mottled with black; ear coverts white; chin and throat white, mottled with grey; across the lower throat and the upper breast a pure white band, bordered on both sides by black; breast, from the black collar downward, light earth brown; belly ashy grey, the vent white; flanks with large and conspicuous black and white feathers; upperparts, from the hindneck backward, earth brown, barred with black (the bars less pronounced than in *A. sumatrana*); chestnut in the wings much reduced (this is a form almost without chestnut in the plumage).

An evaluation of these forms leads to the following comment. Although *A. j. lawuana*, with its dark brown underparts is strikingly and abruptly different from

*A. orientalis*, there are at least three characters in which it shows an approach to *orientalis*, away from nominate *javanica*, viz., the black on the sides of the head is reduced, agreeing in extent with *orientalis*; the pileum has much black, and the barring of the upperparts is weaker than in *javanica*.

The two Sumatran forms are not only very well-differentiated from each other, but each has unique plumage characters not found in any other form of either Java or Sumatra. Contrary to the claim made by Davison, it is *A. sumatrana* which is most heavily barred on the upperparts; it is also the only form with chestnut upperparts. *A. rolli* of northern Sumatra, on the other hand, has the upperparts more lightly barred, somewhat variably, but still more strongly barred than *A. orientalis*. Actually, *orientalis* is weakly marked, as was already pointed out by Ogilvie-Grant (in Robinson, 1905), "Feathers of the back dark earthy-brown, faintly margined with black." This contradicts Davison's claim that the Javanese forms have the upperparts most heavily barred. Davison's division into two species groups, a grey-breasted and a brown-breasted one, has not considered the fact that *A. rolli*, included in the grey-breasted group without comment, has a sepia brown and definitely not a grey breast.

I have superficially examined three other forms which have at one time or another been regarded as conspecific with *A. javanica*; they are *A. campbelli* from the Malay Peninsula and *A. hyperythra* of Borneo (with two subspecies). These also are well-differentiated.

What we have here is a number of very well-differentiated forms, each with some unique characters, and others which it may share with one or more of the other forms, not necessarily the geographically nearest ones.

In summary, the mountain partridges of Java and Sumatra consist of four well-marked forms, two in Sumatra (*rolli* and *sumatrana*) and two in Java (*javanica*, *orientalis*). One of these, *javanica*, can further be subdivided into two subspecies, nominate *javanica* and *lawuana*. Contrary to Davison, I consider that the available evidence does not support the hypothesis of a double colonization, but rather a single one, with the implication that the various forms as we know them now, have developed and differentiated in situ. This brings me close to the views previously expressed by Chasen, with one important difference. Chasen (1935: xviii), by his own admission, took a very broad view of the species. The contemporary species-concept, to which I adhere, is clearly narrower. Therefore, I believe that reality is best expressed by accepting each of the four well-marked forms of Java and Sumatra as a separate species: *A. rolli*, *A. sumatrana*, *A. javanica*, and *A. orientalis*. I would also give species status to *A. campbelli* (regarded as a subspecies of *A. orientalis* by Davison), and to *A. hyperythra* (in agreement with Davison). With this I do, of course, not deny the evident close relationship existing between these species. Indeed, they are an impressive example of what isolation in mountain birds can do. The assumed close relationship between *A. javanica* and *A. orientalis* is supported by their similarity in

voice. "Tape recordings . . . show the (duet) calls of nominate *orientalis* and nominate *javanica* to be similar, if not identical" (Van Balen, 1992). Surprisingly, Van Balen (loc. cit.) claims the occurrence of *A. javanica*, not *A. orientalis*, in the Tengger Highlands. I find this difficult to believe and as the author has since confirmed my suspicion that this was not based on his personal observations, but on hearsay evidence, I consider it justified to ignore it for the present.

The nomenclaturally incorrect combination *A. brunneopectus javanica* was introduced by Chasen (1935: 2). In fairness to Chasen it should be said that he corrected this error within a few years (Chasen, 1940). As is usual in such cases, the correction was overlooked and the original error was perpetuated. When Delacour (1946; 1947: 58-59) took out *javanica*, he left *orientalis* as a subspecies of *brunneopectus*, when it should have become the nominate race of the redefined species.

## PINK-NECKED GREEN PIGEON

### *Treron vernans*

*Columba vernans* Linnaeus, 1771, Mantissa Plant. (pars alt.): 784—  
in Philippinis = near Manila (cf., Stresemann, 1952: 508).

[*Columba*] *purpurea* Gmelin, 1789, Syst. Nat. (ed. 13), Vol. 1 (2):  
784—Java.

[*Treron vernans*] *griseicapilla* Schlegel, 1863, Ned. Tijdschr. Dierk. 1:  
71—de Sumatra et de Bangka = Sumatra (lectotype from S.W.  
Sumatra, cf., Junge, 1936: 6, footnote 2; the year of collecting given  
there, 1853, is a misprint for 1835).

As far as I have been able to make out, it was generally accepted that Java was inhabited by only one subspecies, *T. v. purpurea*, until Chasen (1935: 14-15) listed two, viz., *T. v. griseicapilla* from "Java (West)" and *T. v. purpurea* from "Java (Central and East)." In spite of an exhaustive search in the literature, I have been unable to find a published justification for the addition of *griseicapilla* to the avifauna of Java, but the authoritative character of Chasen's Handlist ensured, nevertheless, a wide acceptance of his unexplained views (cf., Lonsain, 1941: 1; Hoogerwerf, 1948a: 116; 1949a: 72; 1949b: 33, and 1962a: 193; Hellebrekers and Hoogerwerf, 1967: 42; MacKinnon, 1990: 152). Delacour (1947: 98) even allowed *griseicapilla* to range throughout Malaysia, without mention of *purpurea*, although the latter name has 92 years priority. Unfortunately, a discussion of possible geographical variation of *Treron ver-*

*nans* in Java cannot be made without first giving a short review of the muddled nomenclatural history of the species over its whole range. A good date to begin with is the year of introduction of the name *T. griseicapilla*, which may well be called the starting point of the subdivision of the species. According to Schlegel (1863), "Nos individus de Java et de Gorantolo [sic] à Célèbes ont la tête et la gorge d'un vert grisâtre mat. . . . Dans ceux de Sumatra et de Bangka, ces parties sont d'un joli gris bleuâtre. Nous les désignerons sous l'épithète supplémentaire de *griseicapilla*."

The name *griseicapilla*, which he introduced in 1863, is not even mentioned by Schlegel (1873: 49-51) in the catalogue of the RMNH collection, which includes all type material of *griseicapilla*. Nor is there any suggestion of minor geographical variation. Evidently Schlegel himself had withdrawn *griseicapilla* and returned to the idea of a monotypical species. What caused Schlegel's change of mind? When he wrote his first article, before the middle of 1862 (cf., Mees, 1973), the material available to him was very limited. From the catalogue (Schlegel, 1873: 50-51) it can be seen to have consisted of one male from Sumatra (RMNH cat. 1), a series from Bangka (cat. 2-17), one male and one female from Tjikao, Java, I 1827 (cat. 18, 19), one male from Gorontalo, Celebes, X 1841 (cat. 27), and, by his own statement, one juvenile female from the Philippines (two females were received in 1862, cat. 35, 36). In 1873, Schlegel had many more specimens to hand, particularly from Java and Celebes, and it is obviously this increased material which made him aware that his previous classification was not tenable.

Salvadori (1874: 288), on the basis of Schlegel's (1863) discussion, thought that, "Probabilmente gl'individui delle Filippine (*C. vernans*, Linn.), quelli dell'arcipelago della Sonda, tranne Giava (*T. griseicapilla*, Schleg.), e quelli di Celebes e di Giava (*Treron chlorops*, nob.) costituiscono tre species diverse." Consultation of Schlegel's catalogue, as just quoted, shows that the type material of *Treron chlorops* Salvadori consists of two specimens, of which one is from Java and one from Celebes (cat. 18, 27). Cat. 19 from Java is not a syntype, as the name was based exclusively on the male sex. When later Salvadori (1893: 60-64) had an opportunity to study personally material from a variety of localities, he, like Schlegel before him, abandoned the idea of geographical variation and merely noted, "Some specimens have the forehead and throat more or less tinged with greenish, but they are not confined to a particular locality."

This was as matters stood at the end of the 19th century. Early in the present century, undeterred by the conclusions of his illustrious predecessors, Oberholser (1912: 2-3; 1924: 297-298; 1932: 30-33) commenced describing subspecies, in his final paper accepting 11, of which eight were described by himself. Most of these were from the smaller islands, thus circumventing the main problem. More about Oberholser's contribution will be said below.

Hartert and Goodson (1918) addressed themselves again to the problem of geographical variation in the main range of the species. They accepted two subspecies, viz., the nominate one from "Mergui, Malay Peninsula, South Tenasserim, Sumatra, Batoe Islands, the Natuna Islands, Borneo, Bongas, Palawan, Sulu, and Philippines. . . . generally darker all over, and especially the crown of the head is much darker grey" and *T. v. purpurea* from "Java, Kangean Islands, Sumbawa and Celebes. . . . generally lighter all over, and especially the crown of the head is lighter grey."

Later authors, trying to place their material in this pattern, were not always satisfied. Chasen and Kloss (1930: 11), for example, thought that northern and western Borneo were inhabited by *griseicapilla*, but southern Borneo by *purpurea*. This was accepted by Chasen (1935: 14-15), Mayr (1938: 10), and Smythies (1957: 624, and later publications). Voous (1961: 136-137), on the other hand, considered "nomenclatural differentiation on account of this vague distinction between populations in one island impracticable," and elsewhere expressed doubt as to the distinction between *griseicapilla* and *purpurea*.

Very confused is Hachisuka (1932: 176) who states, "Birds from Borneo, Sumatra and Celebes appear to be the same as the typical *vernans*," and follows this by an enumeration in which *griseicapilla* (type locality Sumatra!) is accepted, with a range of "South Tenasserim, Siam and French Indo-China."

I have now had our extensive material of *Treron vernans* on the table several times, and have been forced to conclude that individual variation covers the differences by which previous authors believed to be able to distinguish between nominate *vernans*, *griseicapilla*, and *purpurea*. This removes *T. vernans* from the list of species which show geographical variation in Java.

It is Oberholser's merit to have been the first to observe in this species the otherwise well-known phenomenon of an increase in size on smaller islands. He certainly overdid naming such insular populations, but later authors have at least retained as valid the largest of these, viz., *T. v. adina* of Tioman, the Anamba and the Natuna Islands (cf., Chasen, 1935: 15) and *T. v. miza* of Simalur (Junge, 1936: 5-7; Ripley, 1944: 334-335), and have even added two more size-races, *T. v. kangeana* Mayr and *T. v. karimuniensis* Hoogerwerf. It seems safe to ignore color characters that have been claimed for these subspecies and to concentrate on size. The authors of *kangeana* and *karimuniensis* made no mention of the size-races described previously by Oberholser. As far as expression in nomenclature is concerned, two solutions suggest themselves. Either one subspecies is recognized for the main islands and a single larger one for the smaller islands, or the differences are ignored in nomenclature, and all populations are named binomially. As each island appears to have its own average, often intermediate in size between the smallest and the largest populations, I incline to the second solution. Also, most likely the large-sized populations on the smaller islands have originated independently from each other, under a similar force of selection, so that

similarity in size does not express a close relationship. However, in the framework of the present article, a decision on the nomenclature of the small-island populations is unnecessary.

## DARK-BACKED IMPERIAL PIGEON

### *Ducula lacernulata*

*Columba lacernulata* Temminck, 1822, Recueil d'Ois., 4 (livr. 28), pl. 164—Java = West Java.

*Carpophaga williami* Hartert, 1896, Novit. Zool., 3: 552—Bali, between 2,000 and 3,000 feet.

The two subspecies of this large pigeon are well-differentiated. Nominate *lacernulata* has the crown and the sides of the head pure light grey; in *williami* these parts are pinkish. Strangely, *sasakensis* of the Lesser Sunda Islands Lombok and Flores, has a grey crown again, in this character being closer to *lacernulata* of West Java than to adjacent *williami* of East Java and Bali.

*Ducula lacernulata* is an inhabitant of mountain forest, sometimes as low as ca. 500 m (Bartels, 1906: 513) and up to at least 2,500 m. Although a fair series is available (36 specimens of nominate *lacernulata*, including the type, leg. Reinwardt, and nine of *williami*, two of which are, however, from Bali), the distribution of this species remains very poorly known (Fig. 9). Material of *lacernulata* in the RMNH collection is from Tjibarenno, Bolang, Halimoen, Pangerango, and Pasir Kananga. Literature records add Kole Beres (E. Bartels, 1931: 312), Papandajan (Stresemann, 1930c), and "Mount Malawar, 6,000 feet", for which read "Malabar" (Nicholson, 1882: 69). *D. l. williami* was first recorded from Java by Bartels (1921), who obtained specimens at Idjen and Soember Wringin (also Idjen). Robinson and Kloss (1924: 269) mention material from Sodong Jerok and

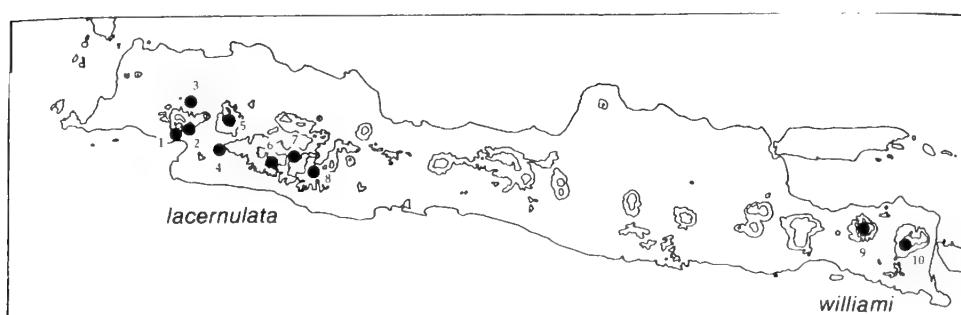


Fig. 9. Range of *Ducula lacernulata*. *D. l. lacernulata*: 1. Tjibarenno; 2. Halimoen; 3. Bolang; 4. Pasir Kananga; 5. Pangerango; 6. Kole Beres; 7. Malabar; 8. Papandajan. *D. l. williami*: 9. Ijang Highlands; 10. Idjen Highlands.

Tamansari (also Idjen), and Kooiman obtained one on Mt. Raoeng, 2,500 m (also Idjen). As far as I am aware, this is all the material existing from Java. According to Kooiman (1941), however, the species is common in the Ijang Highlands, at ca. 2,000 m. It may be assumed that this is *williami*.

There does not appear to be any record of the species from anywhere between Mt. Papandajan (easternmost locality of *lacernulata*) and the Ijang Highlands, leaving an unexplored gap of ca. 650 km between the two subspecies.

In the general literature central Java has usually been included into the range of nominate *lacernulata* (e. g., Bartels, Jr. and Stresemann, 1929: 94; Lonsain, 1941: 1; Delacour, 1947: 103) but, plausible as it is, this seems to be without foundation. The question as to where, and if, the forms *lacernulata* and *williami* meet and intergrade, remains unanswered. In the trend toward a somewhat narrower species-concept, the three forms at present united in the species *D. lacernulata*: *lacernulata* (West Java), *williami* (East Java and Bali), and *sasakensis* (Lombok, Flores) might even be considered realistic candidates for elevation to species status. Many species of *Ducula* are rather similar in appearance; indeed, *D. lacernulata* had for many years been treated as a subspecies of the more widely-distributed *D. badia*, until their coexistence in West Java was confirmed.

## CHESTNUT-BREASTED MALKOHA

### *Phaenicophaeus curvirostris*

*Cuculus curvirostris* Shaw, 1810, Nat. Misc., **21**: pl. 905 and text—  
“probably a native of India” = western Java (reference not verified).

*Phoenicophaës curvirostris deningeri* Stresemann, 1913, Novit. Zool., **20**: 347—Tegal, 1,500 ft., Bali.

To the nominate race, a range over “western and central Java” has been ascribed, whereas the race *deningeri* would cover “Eastern Java; Bali” (Peters, 1940: 55). The subspecies *deningeri* was originally described from Bali, with the diagnosis “Diese neue Form. . . . steht der typischen, javanischen, sehr nahe, unterscheidet sich jedoch durch helleres Braun an Kehle und Kropf und durch in der Regel helleres grau an Oberkopf, Kopfseiten und Kinn” (Stresemann, 1913: 347). Eastern Java was added to the range of *deningeri* by Robinson and Kloss (1924: 276-277), who listed their material from Tamansari under that name. Apart from the ex cathedra statement that the nominate race “is replaced in East Java and Bali” by *P. c. deningeri*, they gave no comment.

Topotypical specimens of *P. c. deningeri*, from Bali, are not available in Leiden, but there are four (2 males, 2 females) from Soember Wringin, Raoeng and one (male) from Renteng, in the extreme eastern part of Java. These birds corre-

spond exactly with Stresemann's diagnosis of *deningeri*, although it must be said that the differences from specimens from West Java, of which large series (89 ex.) were available for comparison, are very subtle and are partly bridged by individual variation. *P. c. deningeri* is a valid subspecies, but only just. A specimen from Wonosalam (not sexed) is also referable to *deningeri*, but two (male, female) from Seneng-Semarang and Gedangan, our only material from Middle Java, as well as two specimens in Amsterdam, from Gedangan (ZMA no. 47.879) and Kaliradioet, Zuid Serajoe Gebergte (ZMA no. 4863), belong clearly to nominate *curvirostris*.

This is a common species of woodland, secondary growth, gardens, etc., which should have an uninterrupted range throughout the lowlands of Java. Presumably, smooth intergradation between the two weakly differentiated forms takes place somewhere near the border of Middle and East Java, but no material is available to verify this, and in view of the similarity between the subspecies, intermediate birds would be difficult to recognize.

## EDIBLE-NEST SWIFTLET

*Collocalia fuciphaga*

*Hirundo Fuciphaga* Thunberg, 1812, Kongl. Vet.-Akad. nya Handl.,

33: 153—Java (reference not verified).

*Collocalia francica bartelsi* Stresemann, 1927, Ornith. Monatsber.,

35: 46—Moeara Wettan (Mündung des Tjitarum), Nordküste von West-Java.

*Collocalia francica javensis* Stresemann, 1931, Bull. Raffles Mus., 6:

89—Cheribon (Java).

*C. f. javensis*, supposedly smaller than *C. f. bartelsi*, was accepted by Chasen (1935: 114), but soon afterward it was withdrawn as a synonym of the latter (cf., Peters, 1940: 224). Through the permutations of nomenclature, both names are now synonyms of *C. fuciphaga* (cf., Medway, 1961).

## ORANGE-FRONTED BARBET

*Megalaima armillaris*

*Bucco armillaris* Temminck, 1821, Recueil d'Ois., 3 (livr.15), pl. 89,

fig. 1—Java. Restricted to the Province of Bantam, West Java (Chasen, 1935: 136).

*Cyanops armillaris baliensis* Rensch, 1928, Ornith. Monatsber., 36:

80—Gitgit, Bali.

The subspecies *M. a. baliensis* was added to the avifauna of Java by Chasen (1935: 136), who observed "A large series from Banjoewangi, East Java, seems just separable on average characters, from *armillaris* of West Java." The differentiating characters claimed for *baliensis* were a darker orange head plate, and larger wing and, in particular, bill. For comparison I had four birds from Bali (2 males, 2 females), eight birds from eastern Java (3 males, 5 females), and a large series from West Java of which 22 males and 21 females were measured (Table 1, measurements in mm.). In wing size, specimens from Bali are within the range of variation of birds from West Java but, admittedly, all are in the upper part of the range. The bills are large; two actually exceed by a fraction the greatest length found in the series from western Java. It looks, therefore, that Rensch was right in stating that Bali birds are larger than those from western Java. Birds from eastern Java tend also toward large bills. None of these small average differences does, by itself, justify subspecific recognition. The specimens from Bali do, however, have the darker, brownish orange forecrown mentioned by Rensch. One out of four has it less pronounced and is not separable from the darker specimens from West Java. Confusingly, one bird from West Java (RMNH cat. 117, 20 X 1957, G. Tangkoeban Prahoe) has a forecrown exactly like the darker Bali birds. The forecrowsns of the specimens from eastern Java are not clearly separable from those of birds from West Java, although they may possibly average a little darker. *M. a. baliensis* is, at best, a very weak subspecies but for the moment I am prepared to retain it for birds from Bali, on the basis of the brownish orange forecrown and the tendency toward large size. Thus defined, this subspecies is confined to Bali. Specimens from eastern Java have to be assigned to the nominate race.

Table 1

<i>Megalaima armillaris</i>						
Locality	Sex	No.	Wing	Tail	Tarsus	Entire Culmen
<b>West Java</b>						
	Male	22	91–100 (94.4)	54–62 (57.4)	22.5–25.2 (23.7)	22.4–25.0 (24.1)
	Female	21	91–98 (94.2)	53–60 (56.6)	22.5–25 (23.8)	22–25.6 (24.1)
<b>East Java</b>						
	Male	3	94–97 (95.3)	56–58.5 (57.2)	23–25.3 (24.4)	24.5–25.9 (25.1)
	Female	5	92–95 (93.7)	53–56 (54.4)	22.5–25 (23.5)	23.2–26.3 (24.8)
<b>Bali</b>						
	Male	2	96, 99	57, 58	24, 23	26, 25.3
	Female	2	97, 98	55, 57	25, 25.5	25.3, 25.8

## BLUE-EARED BARBET

*Megalaima australis*

*Bucco australis* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 181—Java.

*Xantholaema australis hebereri* Rensch, 1930, Mitt. Zool. Mus. Berlin, **16**: 532—Gitgit, Bali.

No claim has been made that the subspecies from Bali, *M. a. hebereri*, would occur in East Java, but it is another race distinguished by size, separated from western Javanese birds merely on the basis of slightly larger measurements.

Chasen (1935: 138, footnote 1) reported that the maximum wing length of his series from West Java was 77 mm and from East Java 78 mm. He had no material from Bali, but concluded that the difference in size between *hebereri* and *australis* was very slight. Although he does not state this clearly, it is evident that Chasen assumed specimens from East Java and Bali to be identical. Fortunately, a fairly large series of this common species has been available to me. The table speaks for itself (Table 2). There is no difference between specimens from West Java and specimens from East Java. Contrary to the claim by Rensch (1930), who based *hebereri* on two specimens only, compared with three from West Java (Indramajoe), birds from Bali are not larger in wing or tail. The bills of the Bali birds average a trifle larger than the bills of birds from Java, although they are entirely within the range of variation of the Java birds. There are no differences in plumage. *M. a. hebereri* is clearly a synonym of the nominate race.

Table 2

<i>Megalaima australis</i>						
Locality	Sex	No.	Wing	Tail	Tarsus	Entire Culmen
<b>West Java</b>						
	Male	27	74–79 (76.6)	38–45 (42.4)	17.8–20 (18.6)	17.4–20 (18.5)
	Female	15	73–78 (75.6)	37–43.5 (40.8)	18–20 (18.8)	18–20 (18.9)
<b>East Java</b>						
	Male	4	77–78 (77.3)	40–44 (42.3)	19–20 (19.5)	18.2–19.2 (18.8)
	Female	3	73–75 (74.0)	37–41 (39.3)	18.5–19 (18.8)	18.5–19.4 (19.0)
<b>Bali</b>						
	Male	2	76, 77	43, 44	19, 19	19.3, 20
	Female	2	74, 76	41, 39	18.8, 18.8	19.9, 19.9

## LACED GREEN WOODPECKER

### *Picus vittatus*

*Picus vittatus* Vieillot, 1818, Nouv. Dict. Hist. Nat. (nouv. éd.), **26**:

91—no locality; Java designated by Hartert, 1902: 434), and this inferentially restricted to West Java by Stresemann (1921: 74).

*Picus dimidiatus* Temminck, 1830, Recueil d’Ois., **4** (livr. 85), text, not illustrated—à Java, à Sumatra et sur le continent indien = Java, from where all the extant type material is.

*Picus vittatus limitans* Stresemann, 1921, Arch. f. Naturgesch., **87** (A) (7): 74—Ost-Kangean.

In the original description the subspecies *limitans*, based on specimens from Kangean, is claimed to average larger than nominate *vittatus* from West Java (Stresemann, 1921: 74). Stresemann noted that *limitans* occurred “anscheinend auch auf Bali,” and added, “Ein sehr großes javanisches Exemplar (ex Verreaux), Flügel 137 mm, stammt vielleicht von Ostjava, dessen Bewohner von denen Westjavas subspezifisch verschieden sein und zur Kangeanrasse gehören könnten.” Evidently Stresemann did not examine any specimens definitely from East Java. Nevertheless, his suggestion was published as fact (but without explanation) by Kloss (1926b), followed by Chasen (1935: 140), Delacour (1947: 176), etc. In this period, v. Plessen (1926: 554) collected a specimen (male, 15 V 1925) in northwestern Bali, with a wing length of only 128 mm, which he therefore listed, without comment, as *P. v. vittatus*. When birds from Bali are assigned to the nominate race, it is no longer logical to expect eastern Java to be inhabited by the Kangean subspecies *limitans*.

The wing measurements published by Stresemann when establishing *limitans* differ so little from those of *P. v. vittatus* from West Java and Sumatra, that by present-day standards the subspecies *limitans* would not be acceptable. Short (1982: 471) gives the following comment, “Eastern Javan, Bali, and Kangean birds (“*limitans*”) are proportionally longer tailed and shorter billed, but not so as to be racially separable.” Note that the character of a longer wing, the only one given by Stresemann, is not mentioned. I could leave it at that, but my interest is in geographical variation as such, even when it is not sufficient for formal recognition in nomenclature. Therefore, I have measured (Table 3) wings, tail, and bill (culmen from skull) of all our sufficiently-labelled specimens from West Java, East Java, and Kangean (material from Bali was not available). Possibly I was the first ever to measure material from East Java. The figures show that the three specimens from East Java are in all their measurements within the range of variation found in West Java. The same can be said of the somewhat inadequate material from Kangean, except that one bird has a rather long tail (thus supporting Short). Except for this one tail, there is no evidence for eastern birds, from East

Table 3

<i>Picus vittatus</i>					
Locality	Sex	No.	Wing	Tail	Entire Culmen
<b>West Java</b>					
	Male	20	125–135 (130.9)	83–103 (91.8)	33.8–37 (35.8)
	Female	17	126–136 (131.3)	90–101 (96.1)	(32), 33–36.8 (34.7)
<b>East Java</b>					
	Male	1	128	85	36
	Female	2	128, 134	93, 100	35, 35.7
<b>Kangean</b>					
	Female	3	127, 133, 135	76+, 94, 105	33.5, 34, 35

Java and Kangean, having shorter bills and longer tails than birds from West Java. Evidently *limitans* is a synonym. Further, Short's claim of shorter bills for eastern birds is not confirmed, and the character of the longer tail is at best questionable. By virtue of their function as a support for the climbing birds, tails are usually very worn, so that tail measurements are of limited value.

## FULVUS-BREASTED WOODPECKER

### *Dendrocopos macei*

*P[icus] analis* Bonaparte, 1850, Conspl. Gen. Av., I: 137—Java  
 (= West Java).

*Dendrocopos analis brevipennis* Hesse, 1911, Ornith. Monatsber., 19:  
 182—Java.

*Dryobates analis montis* Robinson and Kloss, 1923, J. Fed. Malay  
 St. Mus., 11: 53—Tjibodas, West Java.

The validity of *montis* was questioned by Bartels, Jr. and Stresemann (1929: 119) and somewhat hesitatingly rejected by Voous (1947: 91), who at the same time stated that in some cases the differences between *analis* and the supposed mountain form were quite clear. However, he immediately weakened this statement by saying that only a few specimens could be identified without the help of the indications on their labels. *D. macei montis* was recognized by Delacour (1947: 179), Peters (1948: 194), and recently by MacKinnon (1990: 221), and therefore a discussion is still desirable. The description of the range by Peters

(loc. cit.) as "Hills of western Java," is not a fortunate one, especially as he limited the range of *D. m. analis* to exclude western Java.

*D. m. analis* is the commonest woodpecker of Java, occurring mainly in man-made habitat (cultivated country, village gardens, etc.). It is not a forest bird, although it does penetrate the edges of the forest, as noted by Hoogerwerf (1949b: 51) in Tjibodas (the type locality of *montis*). In West Java it is widely and continuously distributed up to a level of ca. 1,500 m, the upper limit of cultivation. The existence of a special mountain subspecies in a species with this kind of habitat preference is quite unlikely.

There remains the question of whether there is some east-west variation. Comparing birds from West Java, East Java, and Bali, I was unable to see any significant difference in plumage, only a fairly large individual variation. In measurements (Table 4) specimens from East Java are not significantly larger than birds from West Java, but as first noted by Hesse (1912: 156-157), birds from Bali are larger. Hesse included Bali in the range of his long-winged subspecies *longipennis* from continental southeast Asia (type locality Bangkok), but Voous (1947: 89) did not agree. He recognized *longipennis* on plumage characters, and included Bali birds in *analisis*, although he was aware of their large size. As it is likely that a larger series would show more overlap in wing length between birds from Java and Bali, I agree with Voous in assigning the latter to *analisis*. More important, in the framework of the present article, is that within Java there is no clear geographical variation in either size, proportions, or plumage.

Short's (1982: 250) criticism of Voous (1947), and his assumption that birds from East Java and Bali agree in size, and "tend to be" slightly larger than birds from West Java, conflicts with my conclusions. Short also discusses Sumatran

Table 4

<i>Dendrocopos macei analis</i>						
Locality	Sex	No.	Wing	Tail	Tarsus	Entire Culmen
West Java	Male	17	92-98 (94.7)	45-50.0 (47.2)	18.5-19.8 (19.0)	21-24 (22.5)
East Java	Male	5	94-96 (95.4)	46-48 (47.3)	19-19.8 (19.3)	22.5-24 (23.2)
Bali	Male	2	100, 101	54, 47	20, 20	24, 23.5
	Female	2	96, 98	50, 50	20, 19.2	23, 21.6

birds, which he claims are similar to birds from West Java. The confident way in which Short discusses the characters of specimens from Sumatra is puzzling, as the species has never been reliably recorded from Sumatra, a well-known hiatus in its range (cf., Voous, 1947: 90 fig. 22; Van Marle and Voous, 1988).

## COMMON GOLDENBACK

### *Dinopium javanense*

*Picus javanensis* Ljungh, 1797, K. Vet. Akad. Nya Handl., **18**: 134,  
p. 6—Java (reference not verified).

*Tiga javanensis exsul* Hartert, 1901, Novit. Zool., **8**: 51—Bali.

Available were a large series from various parts of West Java, five specimens (2 males, 3 females) from extreme eastern Java, and six (1 male, 5 females) from Bali. Four out of the five females from Bali show red feathers on the nape, a subspecific character of *exsul*; the fifth does not have these, but possibly some feathers are missing in this area of the specimen. Only one of the Bali birds has the upper back with some orange (a female with red nape feathers). All six Bali birds have the wings and most of the upperparts more olive green, less yellowish green than all birds from Java. The upper back of birds from Java is very variable, it may be heavily tinged with red, with orange, or with yellowish orange, but the mantle is never as green as in Bali birds. The difference in pattern of the underparts noted by Hartert (1901) and Short (1982: 495) seems questionable. There are no differences in measurements. The specimens from eastern Java agree in every respect with birds from western Java, and show no approach to birds from Bali—even those from Pakis, only 10 km from Bali! Hence, the whole of Java is inhabited by *D. j. javanense* and *D. j. exsul* is a valid subspecies, confined to Bali.

Why then, and on what basis, has East Java been included in the range of *exsul*? It began with Hartert (1901) in the description of *exsul* where he gave as the range for this new subspecies, “Bali (and possibly East Java?).” Subsequently, Robinson and Kloss (1924: 278) commented under *D. j. javanense*, “This race occurs in West and Mid Java; birds from the extreme eastern parts of Java are best placed with the Bali form.” They had one or more specimens from Badjoelmati, which they referred, without further comment, to *exsul*. Whether they had actually found characters to distinguish their bird or birds from Badjoelmati from western Javan birds, or just took up, unchecked, the suggestion made by Hartert, remains unexplained. After this, apparently, the occurrence of *exsul* in Eastern Java became accepted as an established fact, vide Bartels, Jr. and Stresemann (1929: 119), Chasen (1935: 149), Delacour (1947: 181), Peters (1948: 145), and Short (1982: 495).

## GREATER GOLDENBACK

### *Chrysocolaptes "lucidus"*

*Picus strictus* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 176—Java.

*Chrysocolaptes guttacristatus indo-malayicus* Hesse, 1911, Ornith. Monatsber., **19**: 182—Südliches Vorderindien, Insel Salanga. The type is from Salanga.

*Chrysocolaptes strictus chersonesus* Kloss, 1918, Ibis, (10) **6**: 113—Singapore Island . . . and . . . the coast of Johore opposite.

*Chrysocolaptes lucidus kangeanensis* Hoogerwerf, 1963, Bull. Brit. Ornith. Club, **83**: 113—Ardjasa and Paliath Island, Kangean Archipelago.

In a previous paper I dealt extensively with the two forms of *Chrysocolaptes* known from Java, which at that time were considered conspecific, and were known as *C. lucidus chersonesus* and *C. lucidus strictus* (Mees, 1986: 70-78). After discussing the validity of the subspecies *chersonesus*, which I rejected and replaced by *indomalayicus*, I concluded, “It seems to me that the evidence now available is in favour of *strictus* being not conspecific with *C. l. indomalayicus*. As, however, proof either way is not yet available, the form may for the moment stand as *C. l. strictus*”

As shown in the map accompanying the publication cited, the distance between Gobang (where *C. l. indomalayicus* occurred as a fairly common permanent resident) and Mt. Pangerango (where *C. l. strictus* has been found breeding) is little over 50 km. Present evidence suggests that in West Java both forms are so scarce, or at least so patchy in distribution, that the question as to whether they would interbreed when meeting in the wild is bound to remain unanswered.

Although it was not mentioned there, the real reason for my earlier hesitation to separate the two forms specifically, was that taking *strictus* out of the *lucidus* agglomerate, would inevitably lead to a further dismemberment of the widely-distributed and strongly polytypical species *C. lucidus* as it is presently understood. The problem has, however, to be envisaged and will be further discussed below.

A reassessment of *C. lucidus* as hitherto understood becomes inevitable. I believe that the most natural way to split up *C. "lucidus"* is in three species: *C. lucidus*, confined to the Philippines, *C. guttacristatus* from continental southeastern Asia eastward to western West Java, and *C. strictus* from Java (except the extreme west), Bali, and the Kangean Islands (Fig. 10). Possibly the distinctive Ceylonese form *stricklandi* should also be recognised as a separate species, but I have not studied it and prefer not to give a definite opinion. In certain aspects, *C. strictus* and *C. lucidus* (as here redefined) are closer to each other than either

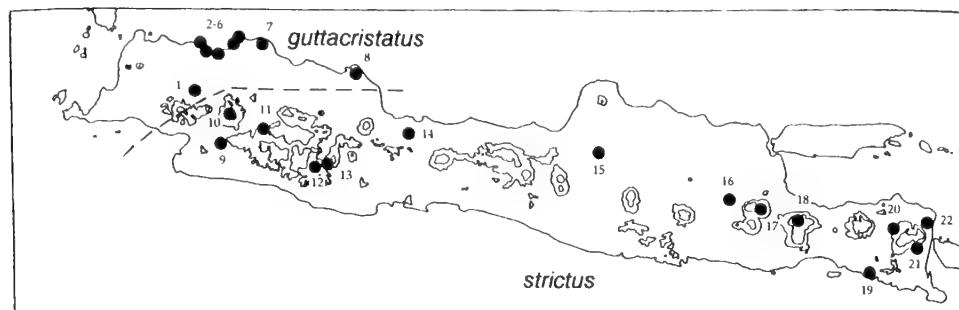


Fig. 10. Ranges of *Chrysocolaptes guttacristatus* and *Chrysocolaptes strictus*. *C. g. indomalayicus*: 1. Gobang; 2. Tandjung Pasir; 3. Kapoek; 4. Batavia = Jakarta; 5. Moeara Gempong; 6. Moeara Boengin; 7. Kali Tjiseloeng; 8. Indramajoe. *C. s. strictus*: 9. Pasir Kananga; 10. Pangerango; 11. Tjihea; 12. Tjisaroeni, Papandajan; 13. Tjikoeraj; 14. Bandjarhardja; 15. Goendik; 16. Wonosalam; 17. Ardjoeno; 18. Ngadiwono, Tengger; 19. Bandialit Bay; 20. Soember Wringin, Idjen; 21. Tamansari, Idjen; 22. Badjoelmati.

is to *C. guttacristatus*. This might lead to the suggestion that *C. strictus* be retained as a subspecies of *C. lucidus*, but the wide separation of the respective ranges makes it unlikely that the relationship is that close. The widely-ranging polytypic species created by our predecessors early in this century, was mainly based on the notion of geographical replacement, i. e., forms with complementary ranges were combined. With *C. guttacristatus* taken out of the conglomerate, however, the single important argument for treating *C. lucidus* and *C. strictus* as conspecific collapses.

As I pointed out in my previous publication, Short's (1982: 501) notion that in eastern Java *strictus* grades into *kangeanensis* and that *kangeanensis* is the subspecies inhabiting coastal eastern Java, is based on an unfortunately formulated sentence by Hoogerwerf (1963c) and is incorrect. *C. strictus* shows no geographical variation in mainland Java.

Although it is not directly relevant, now that I am discussing *C. strictus* I should like to draw attention to the fact that according to Short (1982: 501) this species nests in Java in October and November. This conflicts with Hoogerwerf (1949a: 115) who records eggs taken in July and September and with Hellebrekers and Hoogerwerf (1967: 78) who list from the Bartels collection a clutch collected in May (c/2, 14 V 1923, TjiOdeng, Pangerango, RMNH no. 39378). Hoogerwerf's records were based on two clutches, one his own and one in the Bouma collection. The Bouma collection actually contains not one, but two clutches, about which particulars were supplied by Dr. Somadikarta, viz., c/1, 3 V 1933, Bandjarhardja (MZB no. 767) and c/2, 17 VII 1936, Goendik (MZB no. 766). The reason why Bouma (1936) made no mention of the first clutch is evidently because at that time he was not sure of its identity. Only later, when he

obtained a clutch of *C. strictus* from Goendik and also a skin, did he recognize the first clutch as belonging to the same species. Hoogerwerf published the Bouma clutch collected in July, leaving by inference the September date for his own egg. Hoogerwerf (in Hellebrekers and Hoogerwerf) records the weight of one egg in his collection, without mention of collector or locality. In Hoogerwerf's collection (now incorporated in the RMNH), there is an egg identified (rightly or wrongly) as *C. strictus*. Hoogerwerf's label bears only the following information, "September, W. Java, Hoogerwerf no. 33" (RMNH no. 75742). The absence of even a year of collecting, a proper locality, and a collector's name (surely, if the egg had been collected by, or under the supervision of, Hoogerwerf himself, more particulars would have been available) makes the evidence provided by this egg (e. g., the month September), questionable. Four eggs were listed by Schönwetter (1966: 768), the measurements of which were cited by Hellebrekers and Hoogerwerf, who apparently did not realize that the measurements of three out of these four eggs were taken from Hoogerwerf (1949a), and therefore refer to the same Bouma/Hoogerwerf eggs. Evidently, the above data bear no relation to the information provided by Short. Through the mediation of Mrs. LeCroy, I received the following notes on the question, supplied by Dr. Short, viz., the breeding season was deduced from AMNH specimen no. 552355, a subadult male collected at Mt. Ardjoeno, East Java, on 27 XI 1927 (leg. Menden), which judging by the bill and plumage was a free-flying juvenile. By backdating Short estimated nesting to have been in October–November (and probably late September), as he believes that these birds do not retain their juvenile characters long. He also feels that this nesting period is borne out by the moult of adults. Compared with the direct evidence provided by the eggs, this evidence seems very circumstantial. The matter may be only marginally relevant, but it is not trivial. Although in Java some nesting takes place throughout the year, there is a peak in May, and breeding is at its lowest ebb in the months October and November (Sody, 1930; 1936; Bouma, 1936). The evidence of the eggs shows, at least, that breeding is not confined to the (less likely) months October–November, as suggested by Short. In conclusion: there are two definite records of nesting in May, and one in July. The rest is surmise.

Beside providing me with information about eggs, Dr. Somadikarta has also sent me a list of skins of the two forms present in the Museum Zoologicum. *C. "lucidus chersonesus"*: female, no date, Kapoek (leg. A. G. Vorderman, MZB no. 2502); male, 6 I 1928, Indramajoe (leg. J. J. Menden, MZB no. 4788); male, 28 VIII 1928, Indramajoe (leg. J. J. Menden, MZB no. 6296); male, 13 X 1948, Gobang (leg. G. F. Mees, MZB no. 18900). *C. strictus*: female, VIII 1892, Wonosalam (leg. A. G. Vorderman, MZB no. 2501); male, no date (but see the date of the clutch listed above), Goendik (leg. P. J. Bouma no. 45, MZB no. 18231); male, 22 VII 1941, Bandjarwangi (leg. C. P. J. de Haas). Some of

these data modify the ranges of the two species as shown in the map, based on the Leiden material, published in 1986, which is very small anyway, so that it is worth presenting a new map. The Indramajoe record is especially interesting, as it shows that "*chersonesus*" extends much farther eastward in the northern coastal plain than I had thought.

## BANDED PITTA

### *Pitta guajana*

*Turdus Guajanus* Statius Müller, 1776, *Natursyst.*, suppl., p. 146—

Guajana (errore!) = Java.

*Myiothera affinis* Horsfield, 1821, *Trans. Linn. Soc. Lond.*, **13**: 154—

Java.

Apparently, the first authors to distinguish two subspecies of this pitta in Java were Robinson and Kloss (1924: 279, s. n. *Eucichla cyanura*). About their specimens from East Java, they commented, "This bird has the broad blue gorget figured by Daubenton (Pl. Enl. No. 355); it is replaced in Western Java by a form with a narrower breast band for which we propose to use Horsfield's name, selecting Bantam as the type locality." Kloss (1926a: 161-162) raked up the older name *guajana* for the species and further restricted the type locality of this, the nominate race, "to the district of Banjowangi." No measurements of the breast band were given by these authors! The first to supply these was Kuroda (1933: 337-339) who mentioned for *affinis* a width of 6 mm, for *guajana* a width of 10 mm (one specimen of each?). In the specimen on Daubenton's plate, I measured a width of 22 mm.

In the restrictions of type locality, no account has been taken of historical probability. The Merle de Guiane, on which *Pitta guajana* was based, was obviously thought to be from Guiana, and there is no mention of which collection the specimen belonged to. Horsfield (1821:154) gave no locality for *affinis*, apart from Java, but he gave a vernacular name, "Punglor Javanis." This indicates Middle or East Java, not West Java, where the species is widely known by its Sundanese name "Paok." Horsfield's presumed type specimen, although still extant, is in such a sorry condition, being almost without feathers, that it is without informative value (cf., Warren and Harrison, 1971: 7).

Hoogerwerf (1947c, 1963b) failed to confirm the validity of the single character (the width of the blue breast band) by which previous authors had distinguished *affinis* from *guajana*. Nevertheless, he accepted both subspecies, on the basis of differences in measurements, birds from eastern Java being larger than birds from western Java.

Table 5

Locality	Sex	No.	Wing	Tail	<i>Pitta guajana</i> Tarsus	Entire Culmen	Exposed Culmen	Breast Band
<b>West Java</b>								
	Male	30	102–111 (106.2)	54.5–70 (60.4)	40–44.8 (42.5)	26–31 (28.7)	21.2–26 (23.8)	4.5–15.2 (8.6)
	Female	14	101–111 (105.7)	50–65 (56.1)	40–44 (42.7)	27–32 (28.6)	21.6–25.5 (23.3)	
<b>Middle Java</b>								
	Male	5	107–111 (108.4)	57–69 (62.4)	42–43.6 (42.7)	28–30.2 (28.5)	23–24 (23.5)	5–13 (9.1)
	Female	2	106, 107	58, 64	42.5, 41	28, 27	23, 23	
<b>East Java</b>								
	Male	4	109–112 (110.4)	62–64 (63.4)	43–44.8 (43.8)	28.5–31 (29.6)	23–25 (23.7)	11.6, 12, 13, 17.8 (13.8)
	Female	1	107	62	42	29	22	

Measurements of the RMNH material (Table 5) suggest a tendency both toward a wider breast band and greater measurements in the eastern birds, but neither character justifies, in my opinion, expression in nomenclature. In the width of the breast band, one out of four males from East Java exceeds the maximum for its sex found in the series from West Java, and in wing length, also, one of the four (a different one) exceeds the maximum for its sex found in the series from West Java. In conclusion, birds from the extreme east of Java average slightly larger than birds from West Java, and the width of the blue pectoral band may average a trifle more, but it is extremely variable anyway, and is also influenced by the makeup of skins. *Pitta guajana affinis* is not a valid subspecies. The type locality of *P. g. guajana* is more likely to have been West Java than East Java, whereas, on the other hand, the type locality of *P. g. affinis* is more likely to have been Middle or East Java than Bantam, to which it was restricted by Robinson and Kloss.

## COMMON PIPIT

### *Anthus novaeseelandiae*

*Anthus Malayensis* Eyton, 1839, Proc. Zool. Soc. Lond., 7: 104—  
Malaya.

*Anthus novaeseelandiae idjenensis* Hoogerwerf, 1962, Treubia, 26:  
13—Blawan, Idjen Highland, about 950 m, and Ranau Kumbolo,  
Mt. Tengger, about 2,383 m.

The subspecies *A. n. idjenensis* was diagnosed as being larger in all measurements than *A. n. malayensis*, having more white on the chin, throat, and foreneck, heavier dark markings on the chest, and more contrasting streaks on the pileum (Hoogerwerf, 1962e).

Geographically, *A. n. idjenensis* was not well defined by its author. Specimens from Tengger (ca. 2,383 m) and Idjen (ca. 950 m) were ascribed to it, and were chosen as types. A specimen from Klatakan, in the lowlands at the southern foot of the Ijang Highland, was included, but two specimens from Meleman, a village on the coast ca. 25 km SW of Klatakan were referred to *malayensis*, “which makes it justified to suppose that the characters indicated above are restricted to birds originating from East-Java’s mountains.” This supposition is contradicted by the Klatakan specimen from below 100 m.

Unfortunately, only a single specimen ascribed by Hoogerwerf to *idjenensis* was available to me, the bird from Klatakan (not sexed, but on measurements a male, 9 X 1940, leg. Kooiman, RMNH no. 23407). It is certainly large (wing 88, tail 63, tarsus 30.2, entire culmen 19.6, exposed culmen 15, hindclaw 16 mm), and has rather dark markings on the sides of the throat and the upper breast.

However, the specimen is a rather poor skin, with the neck prepared very long, stretched, and a number of throat feathers missing. At least some of the dark spotting in this region is due to the dark bases of throat feathers being exposed. A specimen from Tambi, Bagelen, Middle Java ("female", but surely male, 31 III 1913, leg. Bartels), is almost as large (wing 88, tail 62, tarsus 29.2, entire culmen 17.3, exposed culmen 14.6, hindclaw 12 mm, perhaps damaged), but it is lightly spotted.

From the above notes it will be clear that I do not like the subspecies *idjennensis*, but its definitive evaluation must await the bringing together of adequate material.

## PIED TRILLER

### *Lalage nigra*

*Turdus Suerii* [sic] Vieillot, 1818, Nouv. Dict. Hist. Nat. (nouv. éd.), **20**: 270—la Nouvelle-Hollande = Timor (cf., Pucheran, 1855: 352).  
*Ceblephyris striga* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 145—Java.

Some years ago I discussed the status of the two forms of *Lalage* known from Java. I pointed out that no definite conclusion as regards their status (either two different species, or subspecies of a single species) is possible without field-work in the region of East Java where they may be in contact (Mees, 1986: 84-88). No such work has been carried out and, therefore, I can add nothing to my previous discussion.

In the same paper I mentioned my attempts to trace the origin of the name Terat-Boulan, listed as the native name of the species. Since then I have found in the RMNH archive a list of material forwarded in 1892 by A. van der Valk of Cagayan, Luzon. This list has an entry for the male and a female of a bird for which the local name is given as Tarat (collected 2 IX 1891). This is, however, *Lanius cristatus luzoniensis*; the name recorded for a specimen of *L. nigra* being Pitapit. The name Tarat is also listed by McGregor (1910: 597) for *Lanius* at Manila. Unsatisfactory as this is, at least it proves that on Luzon the name Tarat exists for a common bird, which makes it possible that the name Terat-Boulan was applied to a species in size and its thick bill not entirely unlike *Lanius*. Tenuous as this reasoning is, it gives some support to the appropriateness of Manila as the type locality for *Lalage nigra*. An additional argument is, that it disposes of the very inappropriate (although nomenclaturally correct) name *chilensis*, a name that, incidentally, not only owed its demise to Stresemann, but also its introduction into current nomenclature (cf., Stresemann, 1930a). In his younger years Stresemann

(1930d: 642) took a strong stand on type localities, "Fixierungen einer terra typica sollten ein für allemal unangetastet bleiben, solange ihre Unrichtigkeit nicht bewiesen werden kann; der Hinweis darauf, dass die gewählte terra typica der Herkunft des Typs wahrscheinlich nicht entsprochen hat, genügt nicht, um einem Autor das Recht zu geben, die Stabilität der Nomenklatur zu erschüttern." Therefore, it is surprising, that in a later paper (1952: 520) he wrote of *Lalage nigra*, "It seems extremely probable that the type came from Manila. If this is accepted, the following changes will be inevitable . . . , thus doing exactly what twenty years earlier he had condemned.

My personal feelings agree with Stresemann's earlier ones (see also Opinion 107). That here, after ample consideration, I have nevertheless decided to follow Stresemann's (1952) proposed change is, besides for the arguments given above, due to the name *chilensis* having been in unchallenged use for only twenty-odd years (1930-1952). These have been followed now by forty years of confusion. There seems very little reason to defend the continued use of *chilensis* on the basis of stability. The consequence is that the subspecies from Java must bear the name *Lalage nigra striga* (Horsfield).

In the meantime, confusion continues to reign. For example, the statement by Dickinson, et al. (1991: 280), "Mayr in Mayr and Greenway (1960) considered Bornean birds *L. n. chilensis*, but Smythies (1960) believed them the nominate form," shows clearly their lack of awareness, that the difference of opinion between Smythies and Mayr was one of nomenclature, not one of identity.

## SCARLET MINIVET

### *Pericrocotus flammeus*

*Pericrocotus exul* Wallace, 1864, Proc. Zool. Soc. Lond., (1863): 485, 492—Lombok.

*Pericrocotus speciosus siebersi* Rensch, 1928, Ornith. Monatsber., 36: 47—vom Berge Gedeh, Westjava . . . vom Berge Tjerimai, restricted to G. Gede by Bartels, Jr. and Stresemann (1929: 125).

## Material Examined

**West Java:** Bolang (4), Pangerango (13), Palaboehan (1), Djampang Tengah (1), Pasir Kananga (1), Tjibening (1).

**Central Java:** Seneng, Semarang (1), Gedangan, Semarang (2).

**East Java:** Idjen Plateau (1), Klatakan (2), Dampar (3), Raoeng (1), Soember Wringin (3).

**Bali:** Bratan (3).

Following its introduction by Rensch, most authors, from Bartels, Jr. and Stresemann (1929: 125) onward have, without comment, included the whole of Java in the range of *P. f. siebersi*. Yet, in the original description Rensch (1928) noted that, “Obgleich diese beiden Rassen sehr deutlich ausgeprägt sind, ist ihre geographische Abgrenzung sehr schwierig, denn Exemplare aus Ostjava und Bali sind in der Färbung intermediär, stimmen aber in Größe mit typischen *P. sp. exsul* von Lombok überein.” He repeated this three years later, “*P. sp. exsul* findet sich nur auf Lombok. In W. Java lebt die Rasse *siebersi* Rensch, in Bali und O.-Java eine intermediäre Rasse” (Rensch, 1931: 561).

On the basis of Rensch’s own evaluation, birds from East Java and Bali are closer to *exsul* than to *siebersi* (intermediate in plumage, but agreeing with *exsul* in measurements). Of all later authors, only Kuroda (1933: 188-189) has correctly interpreted Rensch’s views, and referred birds from East Java to *exsul*. In this connection it is necessary to observe that Rensch based his conclusions on four specimens from Bali, but failed to mention any material from East Java, so that one is tempted to believe that his inclusion of East Java into the range of the intermediate population was based on assumption.

Hoogerwerf (1966b; 1971: 87) found two birds (one of each sex) from Udjung Kulon in the extreme west of Java to be somewhat intermediate between *siebersi* and the Sumatran subspecies *xanthogaster*. I have not seen this material, but specimens from Mt. Karang, in western West Java, which I did examine, do not differ from topotypical *siebersi*. Comparing an adequate series of both sexes from West Java with specimens from East Java and Bali (no material of true *exsul* was available), I found myself unable to confirm Rensch’s claim of differences in plumage between the males, nor between the females, which were not considered by Rensch. On the other hand, the examined material does support the size difference, viz., specimens from East Java and Bali range slightly larger than specimens from West Java (Table 6). An average difference of ca. 2 mm in wing length and ca. 2.5 mm in tail length, seen in the light of an individual variation of 5-7 mm in wing length and even more in tail length, not supported by color characters, is certainly insufficient for formal recognition in nomenclature. Therefore, the whole of Java (and Bali) is inhabited by a single form, *P. f. siebersi*.

I find it confusing that some authors (Hoogerwerf, 1966b; White and Bruce, 1986: 311) refer to *P. f. siebersi* as being red or even pure red. Males of the Sumatran subspecies *xanthogaster* are red, but males of *siebersi* are deep orange, not red.

The original spelling of the name of the Lombok subspecies is *exsul*. This was not an inadvertent misprint as this spelling appears three times in the original description. The name has frequently been emended to *exsul* and once even to *excul* (Hoogerwerf, 1966b). There seems to be no obvious need for any emendation.

Table 6

Locality	Sex	No.	Wing	<i>Pericrocotus flammeus</i>	Tail	Tarsus	Entire Culmen	Exposed Culmen
<b>West Java</b>								
Male	Male	10	80–85 (82.8)	75–80 (78.0)	14.8–16.2 (15.2)	15–17 (16.2)	10.6–12.2 (11.6)	
	Female	10	79–85 (81.4)	74–82.5 (78.8)	14.8–16.2 (15.2)	15–17.5 (16.0)	10.7–13 (11.7)	
<b>Middle Java</b>								
Male	Male	3	80–84 (81.7)	75–80 (77.3)	15.7–17 (16.2)	16.2–16.8 (16.5)	11.5–11.9 (11.7)	
	Female							
<b>East Java</b>								
Male	Male	6	80–87 (84.5)	75–85 (80.7)	15.4–16.5 (15.9)	16.6–18 (17.1)	10.8–13 (11.7)	
	Female	4	82–86 (83.5)	76–84 (81.5)	15–16 (15.8)	15.4–17.6 (16.6)	11–12 (11.4)	
<b>Bali</b>								
Male	Male	2	83, 87	85, 86	16, 16.9	16.9, 17.8	12, 12	
	Female	1	86	86.5	15.8	17	12	

## ORANGE-SPOTTED BULBUL

### *Pycnonotus bimaculatus*

*Turdus bimaculatus* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 147—Java. Erroneously restricted to East Java by Robinson and Kloss (1920: 103); here corrected to Central Java.

*Crocopsis bimaculatus tenggerensis* van Oort, 1911, Notes Leyden Mus., **34**: 46—Nongkodjadjar, Mount Tengger, at an elevation of 1,200 m.

*Pycnonotus bimaculatus barat* Robinson and Kloss, 1920, J. Straits Br. R. Asiat. Soc., **81**: 103—Siolak Daras, 3,000 feet, Korinchi Valley, W. Sumatra.

### Material Examined

**West Java** (*bimaculatus* = “*barat*”): Halimoen (1), Salak (11), Pangerango (40), Gedeh (1), Tjibodas, Gedeh, 1400 m (5), Goenoeng Mas, Poentjak, Gedeh (1), Tangkoeban Prahoe, 1400-1800 m (19), Tjilameta, Tangkoeban Prahoe (1), Tjinjiroean, Malabar, 1700 m (14), Tirtasari (3), Tjisaroeni (1), near Koeningen, Tjerimai (2).

**Central Java** (*bimaculatus* = “*barat*”): Sikatok, Sindoro (3).

**East Java** (*tenggerensis* = “*bimaculatus*”): Wonosalam, Argowajang (1), Nonggodjadjar, Tengger, 1200 m (2), Ngadiwono, Tengger (3), Soember Wringin, Idjen (4), Idjen (1).

**Bali** (*tenggerensis* = “*bimaculatus*”): Boelian, 1200 m (2), Bratan, 1200 m (5).

The first to observe geographical variation in *Pycnonotus bimaculatus* in Java was Van Oort (1911). He described the main difference between birds from West Java and two specimens from East Java very well, naming the latter *tenggerensis*. Some years later Robinson and Kloss (1920) confirmed the difference, but they claimed to have had examined Horsfield’s type specimen, and that it belonged to the eastern, not to the western subspecies. Therefore, they suppressed *tenggerensis* as a synonym of nominate *bimaculatus*, and named the western subspecies, which ranges over most of Java and Sumatra, *barat*. They expanded the diagnosis somewhat, “Birds from Sumatra and West Java are indistinguishable and differ from *P. b. bimaculatus* in the greater extent and intensity of the yellow ear coverts, in the slightly increased amount of olive in the upper surface, brighter edges to the wing and tail feathers and slightly browner, less black, throats.” Of these characters I can, on the basis of a much more material, only confirm the first, the brighter yellow ear coverts, the character also given by Van

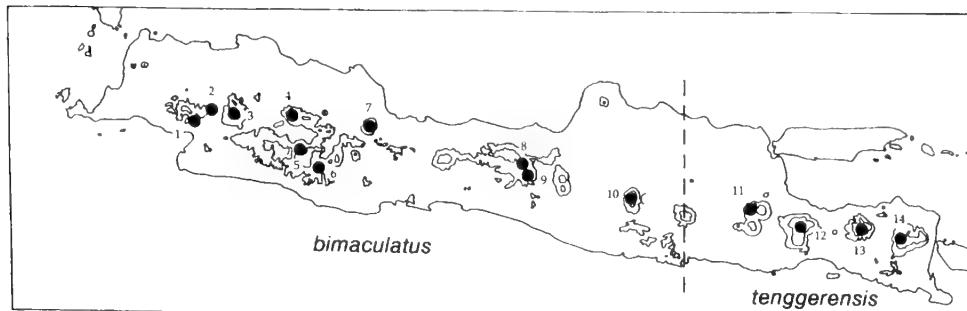


Fig. 11. Range of *Pycnonotus bimaculatus*. *P. b. bimaculatus*: 1. Halimoen; 2. Salak; 3. Pangerango-Gedeh; 4. Tangkoeban Prahoe; 5. Tjinjiroean and Tirtasari, Malabar; 6. Tjis-aroeni, Papandajan; 7. Tjerimai; 8. Sikatok, Sindoro; 9. Soembing (H. Docters van Leeuwen, 1929); 10. Lawoe. *P. b. tenggerensis*: 11. Wonosalam, Argowajang; 12. Tenger Highlands; 13. Ijang Highlands (Kooiman, 1941); 14. Idjen Highlands.

Oort. Following, for the moment, the classification of Robinson and Kloss, *P. m. barat* is a slightly differentiated but valid subspecies.

The border between the two subspecies remains to be defined (Fig. 11). Stresemann (1930c) listed specimens from Mt. Papandajan correctly as *barat*, but added, "Der G. Tjerimai wird von der ost-javanischen Rasse *P. b. bimaculatus* (Horsf.) bewohnt." This was certainly extending the range of the eastern subspecies too far westward. The year before H. Docters van Leeuwen (1929) had referred specimens from the twin volcano Soembing-Sindoro in eastern Middle-Java to *barat*. Voous (1948: 92) further extended the range of *barat* eastward to include Mt. Lawoe.

The observation that the western subspecies occurs so far eastward led to a question about the nomenclature. Although Horsfield is known to have travelled in the mountains of far eastern Java (where he collected *Arborophila orientalis*), certainly most of his collecting of mountain birds was done in Central Java (Mts. Prahoe and Merbaboe), in the range of the western subspecies. One would expect the type material of *Pycnonotus bimaculatus* to have been obtained there, rather than in the far east. The suppression of *tenggerensis* and the description of *barat* were justified by Robinson and Kloss (loc. cit.) with the statement that they "had had" Horsfield's type specimen (in the British Museum) examined; from this it is clear that they did not themselves make the comparison, but they fail to say who was responsible for it, or what material was used in the comparison. Therefore, verification was desirable. I wrote to Mr. Walters about the problem. From his reply, I quote the following lines about the "dullness" of the ear coverts, which is the only reliable character of the eastern subspecies, "I find that in the western form, the anterior coverts are brown with yellow tips, while the posterior ones are almost completely yellow, except at the base. In the eastern form all

the coverts are brown with yellow tips, giving a duller, barred effect. Horsfield's type (and the other specimen which may or may not be another syntype) have lost most of the posterior coverts, so that they look dull by comparison with birds of the western race, but those coverts which remain appear to be yellow over virtually the whole of their length. I think, therefore, that the type is a worn example of the brighter western form, and Robinson and Kloss were wrong in their action" (Walters, in litt., 13 X 1992). It is apparent, therefore, that the original subdivision of the species, as proposed by Van Oort, with *tenggerensis* confined to far eastern Java and the nominate race in the rest of Java and most of Sumatra (except Atjeh, which has the strongly differentiated subspecies *P. b. snouckaerti*), was correct and ought not to have been changed.

## YELLOW-VENTED BULBUL

### *Pycnonotus goiavier*

*Turdus analis* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 147—Java.

*Otocompsa personata* Hume, 1873, Stray Feathers, **1**: 457—  
Acheen = near Koetaradja.

According to Chasen (1937b: 251) only birds from East and Central Java would belong to *P. goiavier analis*, whereas those of West Java would be closer to the Sumatran race *personatus*, characterized by whiter superciliaries and ear coverts. Hoogerwerf (1963a) did not go so far as that, although he accepted *analis* and *personatus* as "not very distinct" subspecies, and allowed that in Udjung Kulon, the extreme west of Java, there might be "a mixed population" which, nevertheless, he included in *analis*. Dammerman (1948: 266-267) was sceptical about the validity of the subspecies *personatus* and Mees (1986: 90) did not like *personatus* at all and united it with *analis*.

I have once more gone over our abundant material from Sumatra, all parts of Java, Bali (5) and Lombok (1), and again I have been unable to find any difference between birds from Sumatra and birds from throughout West Java. Birds from farther east may not have the supercilia as white as some specimens from Sumatra and West Java, but the material from the eastern parts of the range is less rich, so that not the whole scala of individual variation may be represented. Anyway, such differences as may exist between birds from the eastern and the western parts of Java are so minute that they certainly do not merit recognition in nomenclature, and are not even sufficient for counting as an example of geographical variation in Java.

It is perhaps relevant to mention that juvenile birds always have the superciliaries slightly clouded, not as clear white as adults.

## GREY-CHEEKED BULBUL

### *Criniger bres*

*Lanius Bres* Lesson, 1832, in C. Bélanger, Voyage aux Indes-Orientales, Zool. (1834): 255—Java.

*Criniger gularis balicus* Stresemann, 1913, Novit. Zool., **20**: 358—Gitgit (Bali).

In Java this bulbul has suffered more than its fair share of name changes. Originally described by Horsfield (1821: 150) as *Turdus gularis*, it was in this century renamed twice (*Trichophorus xanthizurus* Oberholser, 1905, and *Criniger balicus bartelsi* Collin and Hartert, 1927), as *Turdus gularis* was preoccupied. This led further to the combinations *C. tephrogenys bartelsi* and *C. tephrogenys xanthizurus*. These names were used until Deignan (1956) reintroduced the name *Lanius Bres* Lesson, 1832.

Deignan (1956, and in Rand and Deignan, 1960: 280) refers to *Lanius Bres* as another nomen novum for *Turdus gularis*. That is correct, as is apparent from Lesson's text, although he does not expressly state it. Therefore, it is confusing that Deignan (1956) discusses extensively the localities where Bélanger, the collector of the specimen or specimens examined by Lesson, could have obtained his material, in order to distill from it a type locality. Deignan's conclusion was that the types are lost. However, as *Lanius Bres* is, on Deignan's own evidence, a nomen novum, not a newly described species, its types are not the birds collected by Bélanger but are the types of *Turdus gularis* Horsfield (cf., ICBN, 1985: art. 67 (h)). Two syntypes of *Turdus gularis* still exist in the British Museum (cf., Warren and Harrison, 1971: 225).

To return, after this digression into history, to the matter of geographical variation. When Stresemann (1913) described *balicus*, partly on the basis of large size in comparison with birds from West and Middle Java (he did not have material from East Java), he failed to distinguish between the sexes. As the series measured by me (Table 7) show a clear sexual difference in size (females averaging smaller than males), and Stresemann's small series from Java evidently included a number of females (wing length below the minimum for males from West Java as measured by me in a much larger series), his comparison between a series of both sexes from Java and a series of, apparently, only males from Bali, is meaningless.

Stresemann made no suggestion about a possible occurrence of *balicus* in Java, but Robinson and Kloss (1924: 283-284) introduced it in the following words, under *C. g. gularis*: "This is the West and Mid Java race: it is replaced in East Java and Bali by the following subspecies." The following subspecies is *C. g. balicus*, where no further discussion is given, but material from Tamansari

Table 7

Locality	Sex	No.	Wing	<i>Criniger bres</i>			Exposed Culmen
				Tail	Tarsus	Entire Culmen	
West Java	Male	44	94–106 (101.8)	78–92 (85.2)	19.0–22 (20.4)	19.6–23.4 (21.0)	15.2–18.7 (17.0)
	Female	30	92–102 (95.5)	74–89 (81.5)	18.7–22 (20.1)	18.5–21 (19.9)	14.8–18 (16.0)
Middle Java	Female	1	94	76	20.6	20	15
	Male	4	102–105 (103.8)	82–92 (86)	21–21.2 (21.1)	21.2–23.5 (22.4)	18–18.6 (18.2)
Bali	Female	2	96, 96	85, 85	19, 20.2	21, 21.2	17, 18.2
	Male	3	105–107 (105.7)	86–88 (87)	20.5–21.8 (21.0)	21.8–22.5 (22.1)	18–18.6 (18.2)
	Female	2	99, 99	77, 79	20, 20.8	20.5, 20.6	16.8, 17

and Badjoelmati (East Java) is listed. On the basis of the above flimsy remark, the occurrence of two subspecies in Java appears to have become accepted as an established fact.

The original diagnosis of *balicus* reads: "Die balinesische Form steht der javanischen sehr nahe, unterscheidet sich aber durch bräunlichere Ohrdecken, helleren Zügel und bedeutendere Durchschnittsgrösse." I can confirm that birds from Bali and East Java have browner ear coverts than some specimens from West Java, in which they are greyer and lighter. Many specimens from West Java, however, have them brown, not different from those of *balicus*. Therefore it is at most a slight average difference, by modern standards certainly insufficient for formal recognition. There is no difference that I can see in the lores. As regards measurements, birds from Bali are large; one out of five specimens exceeds all specimens from Java in wing length (by one mm). The limited material available suggests that birds from East Java are smaller and agree in size with birds from West Java. In evaluating the measurements of birds from West Java, it should be kept in mind that in such comparatively large series, there is bound to be some missexing, which may account for the small males. In the series of 44 supposed males, there are only three with a wing length of less than 99 mm, viz., 94, 95, 96 mm. I have little doubt that they are missexed females. In the series of 30 females, the variation in wing length is 92-98, 101, 102 mm; the two largest specimens are under suspicion of being missexed. On the other hand, a variation of 10 mm (92-102), or ca. 10 %, is not excessive.

## COMMON IORA

### *Aegithina tiphia*

*Jora scapularis* Horsfield, 1821, Trans. Linn. Soc. Lond. **13**: 152—Java.

*Aegithina tiphia djungkulensis* Hoogerwerf, 1962, Bull. Brit. Ornith. Club, **82**: 162—Tandjong Alang-Alang, Udjung Kulon (West-Java).

On the basis of an examination of two paratypes (both male) of *A. t. djungkulensis*, I concluded that this population, confined to the Udjung Kulon peninsula in the extreme west of Java, agrees with the Sumatran subspecies *horizoptera*, except that it shows some influence of *scapularis* (Mees, 1986: 105). According to Hoogerwerf (1950; 1962d), the boundary between *djungkulensis* and *scapularis* is the narrow neck of land with which the Udjung Kulon peninsula is attached to the Javan mainland. A male from Tamandjaja, about five miles east of Udjung Kulon, was already referable to *scapularis*. I have once more gone over this material, and found that there are in the RMNH

collection not two, but three paratypes of *djungkulanensis* (2 males, 1 female). Previously I had overlooked the female, as it is inconspicuous in a large tray of *scapularis*.

*Aegithina tiphia* has been revised by Marien (1952) and Hall (1957), but reading their papers, and comparing material, led to several questions about points which either these authors seem not to have formulated with sufficient clarity, or which seem not to agree with some of their conclusions. These differences are partly, or perhaps almost entirely, due to Marien and Hall having studied mainly continental populations, whereas my greatest interest was in the insular populations inhabiting Java and Sumatra. The RMNH collections are very poor in material from the Asiatic mainland.

Both Marien and Hall discussed, and stated as a fact, the existence of separate breeding and nonbreeding plumages in at least the males. According to Marien, adults undergo an incomplete spring moult in which usually only the body feathers are replaced; he continues to say that the nuptial plumage of both sexes is acquired by an incomplete moult before the breeding season. I presume that with spring moult and moult into the nuptial plumage, he means the same, although this is not clearly stated. He further describes a postnuptial moult which is complete, restoring to males an offseason plumage with green upperparts, black tail and dull yellow underparts. Although Marien acknowledges that in some forms males have a "green-backed feminine type of plumage," and that Java and Bali males are always completely hen feathered, one is left in doubt as to whether birds of these populations also undergo a double moult, and whether they also assume a postbreeding plumage with dull yellow underparts. Hall's paper is concerned with variation in nonbreeding dress. My impression gained from this is that all birds, of both sexes, of all subspecies show variation between breeding and nonbreeding dress, and therefore have a double moult as described by Marien. Both authors fail to inform their readers on how they have been able to see, in dry skins, whether these were undergoing moult of the body feathers. Hall: "Adult males in non-breeding dress can be distinguished from breeding males by paler yellow underparts and lack of brilliant gold on the chest. This is especially important in the selection of specimens in comparable plumage from parts of the range in which there is no seasonal difference in the upperparts." These remarks do definitely include the subspecies *horizoptera* and *scapularis*. Hall's map shows for *scapularis* an "all green" breeding dress, and a "yellow-green" nonbreeding dress, thus supporting her statements. This is, however, partly contradicted by her Table 2, in which males in nonbreeding dress as well as in breeding dress are described as "yellow-green." Presumably this refers to the upper parts only, whereas the underparts would vary as described.

In contradistinction, an examination of the RMNH series of *A. t. horizoptera* and *A. t. scapularis* failed to show any seasonal differences in adult birds, be they

males or females. In Sumatra there is a conspicuous sexual difference in plumage, which is entirely absent in *scapularis*.

For the reason given above, I find it impossible to verify whether these birds undergo a moult of body feathers twice a year (e.g., a prenuptial and a postnuptial one), but I consider it rather unlikely. Marien noted that specimens of the species, because of this double moult, more often show moult than specimens of other species of small birds. However, a double moult of contour feathers is not rare among passerine birds. If there is seasonal variation in plumage, including a double partial moult, there should also be a regularity in the main moult. Therefore, I checked the moult of primaries (see Table 8). There is certainly a periodicity in the main moult, all moult being from June to October. Clutches of eggs in the RMNH collection are divided over the months as follows. West Java: April (3), May (13), June (5), July (2); Middle Java (Res. Semarang): March (1), May (1), November (2). At least in West Java this supports strongly the impression that there is a definite breeding season from April to July, and that this is followed by the main moult (see, also, Sody, 1930). I have to leave the matter at that.

Differences between males of *horizoptera* and males of *scapularis* are conspicuous. There is the black tail of the former, as well as the deeper yellow under surface; the upperparts (crown and mantle) are a trifle darker green. I am unable to see any difference between females of *horizoptera* and males and females of *scapularis*. There seems to be no sexual dimorphism at all in *scapularis*. Therefore, the newly-found female specimen of *djungkulanensis* does not help in evaluating the position of its population: it fits with Sumatran females as well as with Javanese females, and I am still left with the two males, previously examined, on which to base my judgement. They can be easily described. The upperparts are those of *horizoptera* (a trifle darker green than *scapularis*), the tails are black, like *horizoptera*, but the underparts are those of *scapularis* (less bright, more greenish yellow, than *horizoptera*). Differences in measurements and in width of edges and markings of wing and tail seem inconsequential and mostly due to state of plumage wear. They are very close to *viridis* from southern Borneo, as also noted by Hoogerwerf, but are a trifle lighter on the upperparts and perhaps a trifle less yellow on the underparts, especially the throat. The difference is at most very subtle.

It remains to be considered what to do nomenclaturally with *djungkulanensis*. For geographical reasons it is likely that its resemblance to *viridis* is fortuitous. Generally speaking I still stand behind my previous opinion that *djungkulanensis* is *horizoptera* which has undergone a slight influence of *scapularis*, for in the colours of its tail and upperparts it resembles the former, and in the color of its underparts the latter. I am now inclined to think, however, that for practical reasons and in view of its limited, almost insular range, it might be defensible to recognize *djungkulanensis*.

Table 8

## LONG-TAILED SHRIKE

### *Lanius schach*

*Lanius quadricolor* Vieillot, 1818, Nouv. Dict. Hist. Nat. (nouv. éd.),

**26:** 150—des Terres Australes = near Soerabaja, East Java (Stresemann, 1953: 97, 106).

*Lanius bentet* Horsfield, 1821, Trans. Linn. Soc. Lond., **13:** 144—Java.

*Lanius schach tosariensis* Kuroda, 1930, Tori, **6:** Engl. col. 76—Tosari, 6,000 feet, E. Java.

The considerable variation in the amount of black on the anterior upperparts in birds from Java had been noted and described several times (cf., Ogilvie-Grant, 1902: 478; van Oort, 1910: 153; Hellmayr, 1914: 36) before Kuroda (1930) described and named an individual of the variant with an entirely black pileum as *L. s. tosariensis*. Kloss (1931: 355) commented that the name was based on what seemed to him, "to be merely extremely black-headed examples of *bentet*" and Kuroda (1932) himself, whose material was very limited, was inclined to agree although in his book he still retained *tosariensis* (Kuroda, 1933: 145, pl. VII fig. 8). Mayr (1944: 163-164) again discussed and rejected it.

The rejection of *tosariensis* on the basis of the argument of very great individual variation is certainly correct. I do not think, however, that this should be the definitive end of the discussion about "*tosariensis*." The fact remains that there is a concentration of black-capped birds in eastern Java. Birds with the whole pileum, nape and often even the upper back sooty black seem to be confined to eastern Java, Bali, and southeastern Borneo. In the remainder of Java variation in the amount of black may be from a fairly narrow frontal band to its covering the whole of the anterior half of the crown (Fig. 12). Kuroda's beautiful plate of *tosariensis* is not quite accurate, in that it shows the black rather too glossy and, more important, that it shows the black backward, ending abruptly against the grey of the upper back. In all specimens examined by me, the black merges gradually and somewhat irregularly into the grey of the back. If the available samples are representative (and I think they are), birds with the black restricted, e.g., "normal" *bentet*, are a minority in eastern Java and Bali. Kuroda's original idea that *tosariensis* is a valid subspecies intergrading with *bentet* over rather a large area might even be considered defensible. Against this mitigates not only the fact, already mentioned, of great individual variation, even far outside the possible range of "*tosariensis*", but also the fact that to the east of Bali only grey-headed birds are found.

There is some sexual difference in the amount of black: within a population, the females having less. In the generally grey-headed populations of Sumatra and West Java, males usually have black at least about the anterior third of the crown,



Fig. 12. *Lanius schach bentet* in dorsal and lateral aspects. In each photograph the left and middle specimens are from West Java, showing the approximate limits of normal individual variation in the extent of black pigmentation in males; the right specimen is the most strongly melanistic example in the Leiden series from East Java (♂, 27 XII 1938, Ngadiwono, RMNH, no. 23345).

whereas most females have a distinctly narrower frontal band. In East Java, also, the most extreme examples of “*tosariensis*” are males, but there are females with the whole crown and nape black.

In summary, in eastern Java, Bali, and southeastern Borneo, there is a variable tendency to melanism of the upperparts, which in extreme cases produces birds strikingly different from normal *bentet*. The variation must certainly have a genetic base. In this connection it must not be overlooked that several other subspecies of *Lanius schach* are normally black-headed, whereas in the nominate race “black mutants” have been recorded; these are known as the forma *fuscatus*, which differs quite as much from normal *schach* as *tosariensis* does from normal *bentet* (cf., Stresemann, 1923; Olivier, 1944: pl. X, etc.). Incidentally, the individual variation in the degree of melanism found in *L. s. bentet* suggests to me a fairly complicated mode of inheritance, not simply “a mutant”, and therefore well worth further investigation.

## MAGPIE ROBIN

### *Copsychus saularis*

*Turdus amoenus* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 147—  
Java = East Java.

*Lanius musicus* Raffles, 1822, Trans. Linn. Soc. Lond., **13**: 307—  
Sumatra.

*Copsychus saularis javensis* Chasen and Kloss, 1930, Bull. Raffles Mus., **4**: 89—Wynkoops Bay, S. W. Java.

The two subspecies are strikingly different, the lower underparts being white in *musicus* (of which *javensis* is a synonym), and black in *amoenus*. In addition, *amoenus* is a little larger than *musicus*. There is a huge area of intergradation between the two subspecies, from southern West Java to northeastern Middle Java, as discussed and illustrated by Mees (1986).

In spite of the extent of the area of intergradation, the conspicuous differences between the subspecies *musicus* and *amoenus* suggest secondary, not primary contact. The belt of intergradation is large because of its diagonal position across Java, although its actual width is not more than 100 to 150 km, at most.

## WHITE-RUMPED SHAMA

### *Copsychus malabaricus*

*Turdus tricolor* Vieillot, 1818, Nouv. Dict. d'Hist. Nat. (nouv. éd.), **20**: 291—On soupçonne que cette espèce se trouve dans les îles de la mer du Sud. Restricted to Bantam, W. Java by Robinson and Kloss, in Kloss, 1921a: 210, footnote.

*Kittacincla macrurus omissa* Hartert, 1902, Novit. Zool., **9**: 572—Lawang, East Java.

*Kittacincla malabarica javana* Kloss, 1921, J. Fed. Malay St. Mus., **10**: 210—Karangbolang, south coast of mid-Java.

## Material Examined

**Northwestern West Java** (*tricolor*): Tandjong Tjerdeng, Oedjoeng Koelon (1), Pasir Lengang, Goenoeng Karang (1), Oedjoengteboe, 1000' (1, BM 1927.4.18.563, marked as neotype of *tricolor*), Depok (2), Semplak (2), Tjikao (1), and without exact locality (2).

**Southern and eastern West Java** ("*javanus*" = *omissus*): Tjiletoe (10), near Palabuhan/Palabuan Ratu (2), Tjimadja (3), Tankoeban Prahoe (1), Bandjar (12).

**Central Java** ("*javanus*" = *omissus*): Goendih (1), Gedangan, Semarang (1), Manggas, Gedangan (1), Seneng, Semarang (1), Ngiliron, Rembang (1), Randoebatoeng, Rembang (1), Manggar, Rembang (1).

**East Java** (*omissus*): Badjoelmati, 100' (2, BM 1927.4.18.560 and 561), and merely labelled "East Java" (1, leg. Wallace, BM 73.5.12.721).

In addition, material from Sumatra, Bangka, Billiton, and Karimata (*tricolor*), and from Borneo (*suavis*) was studied.

*Copsychus malabaricus* is known for its pronounced geographical variation. More of this will be said further on, but first the situation on Java will be discussed. Leaving out, for the moment, the black-tailed subspecies inhabiting the surrounding islands, viz., *C. m. nigricauda* on the Kangean Islands and *C. m. mirabilis* on Prinsen Eiland, three subspecies have been ascribed to the Javanese mainland; these are *C. m. tricolor* in the West, *C. m. javanus* in the Middle, and *C. m. omissus* in the East. As usual, the limits between these subspecies have never been clearly defined.

The subspecies *tricolor* and *javanus* are well-differentiated from each other, the former being larger, and darker on the underparts than the latter. *C. m. tricolor* is the subspecies inhabiting the whole of Sumatra, as well as Bangka and Billiton, but in Java it is confined to the northwestern part of West Java (Fig. 13). It ranges much farther east in the northern lowlands, at least to Indramajoe, than in the South, where birds from the Wijnkoops-baai are clearly *javanus*. In the northern lowlands the easternmost locality whence I have examined a specimen is Tjikao near Poerwakarta (male, 10 I 1827, leg. H. Boie, RMNH cat. 2). The extension of the range of *C. m. tricolor* to as far east as Indramajoe is based on Kuroda (1933: 315 and pl. XIII fig. 9). Although Kuroda simply assigned his

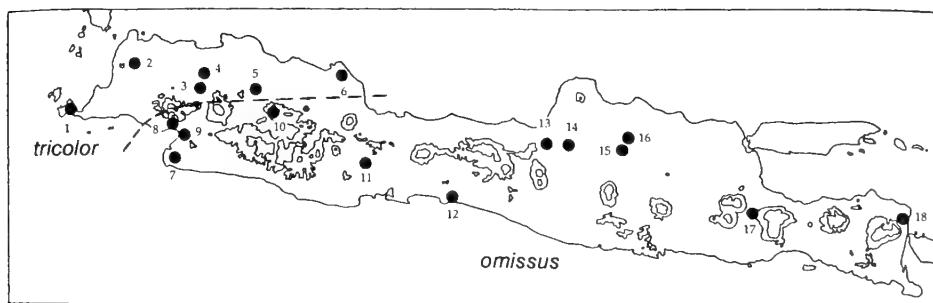


Fig. 13. Range of *Copsychus malabaricus*. *C. m. tricolor*: 1. Oedjoeng Koelon; 2. Karang; 3. Semplak; 4. Depok; 5. Tjikao; 6. Indramajoe (Kuroda). *C. m. omissus*: 7. Tjiletoe; 8. Tjimadja; 9. Palaboehan Ratoe; 10. Tangkoeban Prahoe; 11. Bandjar; 12. Karangbolong (type locality of *javanus*); 13. Gedangan; 14. Goendik; 15. Randoebatoeng; 16. Ngiliron; 17. Lawang (type locality of *omissus*); 18. Badjoelmati.

specimen to *tricolor*, because Indramajoe is in West Java, the measurements provided by him (male, wing 94, tail 127+, tarsus 26, exposed culmen 13.5+, entire culmen 19+ mm), and the colored plate, showing a dark-bellied bird, indicate the identification is correct.

Differences between *C. m. javanus* and *C. m. omissus* are far less convincing. The two nominal subspecies agree in measurements (Table 9) and in the comparatively pale color of the underparts. In the description of *omissus*, Hartert (1902) stressed the presence of "a more or less conspicuous whitish patch where the blue-black of the chest and the orange-chestnut of the abdomen join, there being a whitish area on some of the orange-chestnut feathers, between the orange-chestnut tips and the blackish bases, and sometimes some whitish tips to some of the blue-black feathers." It should be kept in mind, that at that time Hartert believed that he was differentiating a subspecies ranging over the whole of Java, although his material happened to be from the eastern part of the island.

The first to study variation in Java was apparently Kloss (1921a). He correctly referred birds from extreme northwestern Java to the mainly Sumatran subspecies *tricolor*, although his restriction of the type locality of *tricolor* to Bantam is unfortunate, being based on a misinterpretation of the literature, as I pointed out elsewhere (Mees, 1986: 119-120). Kloss further restricted the type locality, by suggesting as neotypes two specimens (male and female) from Oedjoengteboe, 1,000 ft near Pandeglang. Fortunately, this is well within the range of *tricolor* in Java and would offer no problems, but I am not aware that a proposal to validate these neotypes has been published, and they have certainly not been formally accepted, as required under the rules laid down in the present Code (ICZN, 1985; Art. 75). In separating *javanus* from *omissus*, Kloss more or less repeated the character Hartert had given for his birds from (eastern) Java. *C. m. javanus* would be, "like the males of *K. m. omissa*. . . . but without the indistinct white border to the black breast." Kloss further claimed that the female of *javanus* is as dark on the underparts as the males, whereas in both other subspecies (*tricolor* and *omissus*), the females would be paler than the males, the females of *javanus* thus being darker than the females of the other subspecies. Hartert's qualified remark about the indistinct white border, heavily larded with "some" and "sometimes", already shows that this is not a very good character. As I am unable to confirm Kloss's observations on differences between the females, preciously little remains to distinguish *javanus* from *omissus*. I propose to synonymize the former with the latter. This leaves two subspecies on Java, which can be differentiated as follows:

***C. m. tricolor* male and female:** upperparts (except the white rump), throat and breast glossy bluish black; lower underparts deep chestnut. No clear differences between the sexes. Kloss's claim that females of West Javan *tricolor* are pale is an error; presumably his females were not quite mature.

***C. m. omissus* (including *C. m. javanus*) male and female:** generally similar to *tricolor*, but size smaller and the lower underparts decidedly lighter in

Table 9

<i>Copsychus malabaricus</i>								
Locality	Sex	No.	Wing	Tail (central feathers)	Tail (lateral feathers)	Tarsus	Entire Culmen	Exposed Culmen
<i>C. m. suavis</i> <b>Borneo</b>	Male	8	100–106 (102.5)	137–156 (148.6)	97–105 (99.9) 87.5	25–27.7 (27.0) 25.2	20–24 (21.9) 23	14.6–17.3 (16.0) 16
	Female	1	94	120				
<i>C. m. tricolor</i> <b>Sumatra</b>	Male	21	93–101 (97.8)	137–208 (171.2)	83–115 (101.9)	25–27.4 (26.0)	18.6–22.5 (20.9)	14–17 (15.1)
<b>Bangka, Billiton, Karimata</b>	Male	6	94–102 (98.2)	142–155 (148.7)	93–103 (98.3)	25–27 (26.0)	20–22 (20.8)	14.6–15.9 (15.1)
<b>Northwest Java</b>	Male	7	95–100 (97.7)	130–157 (145.6)	83–108 (97.4) 67–92 (84.0)	25.5–27.2 (26.6) 25–27.5 (26.2)	18–21.9 (20.5) 20–21.3 (20.5)	13.2–16 (15.4) 14.2–16.9 (15.3)
	Female	4	90–95 (91.5)	97–125 (110.8)				
<i>C. m. omissus ("javanicus")</i> <b>West Java</b>	Male	20	86–94 (90.4)	105–139 (125.2)	75–94 (87.1) 76–81 (78.8)	24.5–27 (25.8) 23.3–25.2 (24.2)	18.8–21 (19.8) 17.8–20.3 (19.1)	14.0–16.3 (15.3) 13–16.7 (14.7)
	Female	8	79–85 (82.6)	92–110 (100.1)				
<b>Middle Java</b>	Male	6	89–96 (92.7)	119–141 (128.3)		26–27 (26.5) 25.4	19.8–21.5 (20.6) 19.6	14.6–17 (16.0) 16.0
	Female	1	85	101				
<i>C. m. omissus</i> <b>Eastern Java</b>	Male	2	92, 93 81	120, 136 Broken	104, 111 86	26.3, 25.5	20.9, 19	16.0, 15.5
	Female	1						

color. No clear difference between the sexes. Hartert found the sexes identical in coloration; Kloss found his one female from East Java "distinctly paler below—almost as pale as females of West Javan *tricolor*".

As mentioned above, I have been unable to confirm the existence of color differences between the sexes in the subspecies inhabiting Java. The only sexual differences are in general measurements, females being smaller than males, and having in particular much shorter central tail feathers (Table 9). Whether sexual dimorphism in plumage is absent in all subspecies remains to be verified. The Bornean subspecies *C. m. suavis* has been described as having the "sexes alike" (Smythies, 1981: 301). Yet, of a pair collected by Büttikofer at the nest and, therefore, undoubtedly adult, the female is on the throat and breast less glossy than the male and its lower underparts are less dark. Only this one female has been available to me and there is the chance that, although mature, it has not yet attained its fully adult plumage.

Remarkable is the amount of variation in tail length, especially in the males, and particularly in the long central feathers in which an individual variation of over 25% occurs. Some males from Sumatra have particularly long tails. Whether this variation has a purely genetical base, or whether age and external factors play a role, remains to be investigated.

Although I have discussed the type locality of *C. m. tricolor* in a previous paper, I add some notes here, as an example of the arbitrary way restrictions and designations of type localities were made in the beginning of this century. Frequently type localities were shifted merely to suit the convenience of an author (see the examples of *Pitta guajana* and *Prinia familiaris* in this paper). Evidently the underlying idea was that when several old names (based on specimens of uncertain provenance) were available for a species showing geographical variation, these should be spread out in such a way that as many of them as possible could be retained as valid subspecific names. Whereas the principle is laudable, i. e., to make maximal use of available old names and avoid creating new ones, at the same time this completely ignored historical probability and even conflicted with known facts. Discussing the type locality of *Turdus tricolor* (= *Copsychus malabaricus tricolor*), Robinson and Kloss (1921-1924: 314) claim, "Further, the description by Scopoli in 1786 . . . of the Malabar birds as *Muscicapa malabarica* should prevent "India" being selected for a typical locality." Of course, this is nonsense. The earlier description of a specimen from Malabar can in no way influence or change the type locality of a specimen of the same species described later (without reference to the earlier description). With equal justification, one could act in the opposite way, viz., designate as type locality, for names based on specimens of unknown provenance, the type locality of the bird named first, so that other old names enter smoothly into its synonymy.

Now that I am discussing the nomenclature of *Copsychus malabaricus*, a few words about its treatment in the "Check-list of Birds of the World" (Ripley, 1964:

69-72) may be in order. To begin with, the subspecies *C. m. macrourus* (Gmelin, 1789), type locality Pulo Condore (on recent maps Con Son), off the coast of Cochinchina, has been overlooked. The Riouw Archipelago is included (correctly) within the range of *C. m. tricolor*, but this is preceded by a subspecies *C. m. mallopercus* (type locality Singkep), with a range including "Rhio, and Lingga Archipelagos." It seems not to have been understood that Riouw and Rhio are the Dutch and English spellings of the same name. *Cittocincla nigricauda* Vorderman was described in volume 52 of the *Natuurkundig Tijdschrift*, not volume 42 and *Turdus tricolor* Vieilliet in volume 20 of the *Nouv. Dict.*, not volume 30. *Copsychus stricklandii* of northern Borneo is, without comment, treated as a separate species. This is defensible, but a reference should have been given to Stresemann (1938: 132), who recorded extensive hybridization between *suavis* and *stricklandii* at Peleben, a village on the Bahau River near its confluence with the Kajan, to explain why several authors (e.g., Smythies, 1957: 710, and later publications) consider them conspecific. The formulation by Smythies that *suavis* and *stricklandii* "overlap" (without mention of hybridization), is unfortunate; it conflicts with his own opinion on the status of these forms and may have contributed to later misunderstandings. Moreover, whereas in 1957 Smythies stated that, "On the east side they are said to overlap from somewhere south of the Indonesian border to Darvel Bay," this was changed in his subsequent publications (Smythies, 1960: 390, and still 1981: 302) to the statement that in eastern Borneo the "overlap" extends from the Indonesian border to Darvel Bay, thus placing it entirely in North Borneo (Sabah), and much too far north. This was remarked upon by Thompson (1966: 421), none of whose specimens of *stricklandii* from near the southern border of Sabah showed characters and tendencies toward *suavis*. It must have influenced his decision to follow Ripley in treating them as different species.

What Stuart Baker (1930: 133-114) had in mind when he claimed that *malabaricus*, *macrourus*, *tricolor*, and *minor*: "all have the same basis, i.e., Latham's Long-tailed Thrush," is obscure, as of these four names, only *macrourus* was based on Latham. His change of the type locality of nominate *malabaricus*: "Malabar in errore = Pulo Condore" is equally incomprehensible.

## ORANGE-HEADED THRUSH

### *Zoothera citrina*

*Geocichla rubecula* Gould, 1836, Proc. Zool. Soc. Lond., **4**: 7—Java;  
restricted to West Java by Bartels (1938a).

*Geocichla citrina orientis* Bartels, Jr., 1938, Ornith. Monatsber., **46**:  
115—G. Raoeng, O.-Java.

The subspecies *orientis* was separated from *rubecula* exclusively on the basis of slightly larger wing size, viz., *orientis* male 113 mm, 2 females 111, 114 mm, and *rubecula* 10 males 104-109.5 mm, 6 females 102-108.5 mm.

Based on different material, Jany (1953b) tried to verify the difference claimed by Bartels. He concluded that not only going from west to east, but also within West Java with increasing altitude, there is an increase in size. Moreover, he found this to be correlated with a decrease in pigmentation of the breast feathers, and considered that both phenomena were due to Bergmann's Rule.

The much greater material studied by me, which includes all the specimens measured by Bartels, confirms the difference but also shows that it is slight (Table 10). Although there is a clear difference in the averages, there is overlap in the wing length, two of the five specimens of *orientis* being within the range of variation of *rubecula*.

There is every reason to assume that *Zoothera citrina* has (or more likely had, in the recent past) a continuous range throughout Java, but the material in the RMNH collection conforms to the usual pattern of many specimens from West Java, a few from the far eastern parts of the island, and nothing from between. Evidence that the species is present in the intervening regions is provided by published records from Klèdoeng, 1,600 m (H. Docters van Leeuwen, 1929) and Nongkodjadjar, 1,200 m (Jany, loc. cit.). Unfortunately, few of the specimens available to me have the altitude of collecting indicated on their labels, but even a rough separation of specimens from "Batavia" and "Buitenzorg", similar to the groups made by Jany, fails to confirm his conclusions. I note that in Jany's own list the females from the "Tiefland" actually average larger than those of the "Vorgebirge." The maximum size recorded for mountain birds (900-1,600 m) by Jany, is also attained and exceeded by specimens from near Buitenzorg. Two specimens from above Bandoeng, 900 m (2 males), have moderate-sized wings of 107 and 108 mm. One of Jany's mountain birds may be large, not because it is from the high level of 1,600 m, but because it is from Klèdoeng, in the eastern part of Central Java.

The difference in average measurements between *rubecula* and *orientis* is real (Table 10), but a sampling of populations in eastern Central and in western East Java, would probably show a smooth gradient rather than an abrupt difference. As even the extremes seem doubtfully sufficiently differentiated for formal recognition, the validity of *orientis* is questionable.

No material from Bali has been examined by me. Hartert (1896: 543) gives for an adult male a wing length of 110 mm, Rensch (1930: 536) for a female one of 208 mm, presumably a misprint for 108 mm. The specimen should be in the Berlin Museum, but Dr. Mauersberger (in litt., 5 X 1990) has searched in vain for it, so that this cannot be verified. Until more material becomes known from Bali, there is no point in speculating whether the trend toward larger size, going

Table 10

Locality	Sex	No.	Wing	Zoothera citrina Tail	Tarsus	Entire Culmen	Exposed Culmen
<b>Java (western half of west)</b>							
	Male	40	103–112 (107.5)	65–74 (68.9)	28, 31–34 (32.1)	20–23.8 (22.2)	16.9–19 (17.8)
	Female	30	102–111 (106.9)	63–72 (68.5)	30.2–32.5 (31.8)	21.5–23 (22.3)	17–19 (17.8)
<b>Java (west-central: Cheribon and Tegal)</b>							
	Male	4	107–109 (108.3)	69.5–73 (70.8)	32–33 (32.5)	21–22.1 (21.5)	17.2–18 (17.5)
	Female	5	106–107 (106.6)	66.5–73 (69.1)	31.6–33 (32.1)	20–22.5 (21.4)	16.4–18 (17.6)
<b>Java (extreme east)</b>							
	Male	3	111–114 (112.7)	69, 71, 76 (72)	32.2–35.8 (33.9)	23–24.9 (24.0)	17.6–20 (18.9)
	Female	2	111, 113 (112)	70, 72 (71)	32.8, 33.6 (33.2)	23.7, 23 (23.4)	17.2–18 (17.5)

from west to east in Java, is reversed on Bali. As they stand, these figures further weaken the case for upholding *orientis*. I do not accept this subspecies.

## ISLAND THRUSH

### *Turdus poliocephalus*

*Turdus Javanicus* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 148—

Java = presumably Mt. Merbaboe or Mt. Prahoe (cf., Mees, 1989: 376).

*Turdus (Merula) fumidus* S. Müller, 1844, Verh. Nat. Gesch. Ned.

Overz. Bez., Land-en Volkenk., 201—Java en wel alleen bij en in den krater van den berg Gedee, op ruim 8000 voet hoogte boven de zee.

*Merula whiteheadi* Seebohm, 1893, Bull. Brit. Ornith. Club, **1**: xxv—

near Tozari in East Java, 7,000 feet above sea-level.

*Turdus javanicus biesenbachi* Stresemann, 1930, Ornith. Monatsber.,

**38**: 149—Papandajan, 2,600 m.

*Turdus javanicus stresemanni* Bartels, Jr., 1938, Ornith. Monatsber.,

**46**: 113—G. Lawoe, ca.. 2,000 m.

Currently, no less than five subspecies of this high mountain bird are recognized in Java. One of these is, in my opinion, insufficiently differentiated for formal recognition, so that I accept four subspecies. Apart from a slight difference in size, the females averaging a trifle smaller than males, the sexes are identical or almost identical. The material examined and its measurements are summarized in Table 11.

Beside the localities listed in the table, the species has been recorded from Mt. Ardjoeno (Hartert, 1896: 538), Mt. Kawi (W. M. Docters van Leeuwen, 1935), and the Ijang Highlands (Kooiman, 1941), all in East Java. Loerzing (1916) mentioned the occurrence of thrushes very like European ones, from the summit region of Mt. Patoeha, West Java; quite likely it concerned the present species, but in the absence of a description the identity of these birds remains doubtful. In a previous publication (Mees, 1989), I suggested the occurrence of *T. p. javanicus* on Mt. Prahoe (2565 m), Dieng Plateau, Middle Java, but this was purely speculation, without a shred of evidence. However, recently it was found by Van Balen (in litt., 26 VI 1995) to be fairly common there above 2,400 m. Considering the nearness of Mt. Sindoro, this is not a surprising extension of the known range. Previously the lowest mountain from which this species had been reliably recorded in Java was Mt. Papandajan (2,660 m) and therefore confirmation of its occurrence on Mt. Patoeha (2,434 m) and other lower mountains would be particularly welcome.

Table 11

Locality	Sex	No.	Wing	Tail	Tarsus	Entire Culmen	Exposed Culmen
<i>T. p. fumidus</i>							
Pangerango-Gedeh	Male	21	117–129 (124.7)	85–100 (94.8)	31–35.5 (33.7)	21.9–25 (23.3)	17.2–20 (18.7)
	Female	17	113–125 (119.2)	83–94 (90.5)	31–34 (32.9)	22–24.5 (23.3)	18–20 (19.1)
Papandajan	Male	3	121–125 (122.7)	90–94 (91.7)	31.5–35 (33.2)	22.8	19.5
	Female	3	118–120 (119.0)	83–89 (85.0)	32.5–34.5 (33.7)	23.4–25 (24.1)	19.5–19.8 (19.7)
<i>T. p. javanicus</i>							
Tjerimai	[Male]	1	126	91	33.5	23.2	19.5
	Female	3	116–117 (116.3)	84–88 (86.7)	30–32 (31.1)	22.3–24 (23.4)	19–19.7 (19.2)
Slamat	Male	4	121–126 (122.3)	86–93.5 (89.4)	31.4–34 (32.5)	22.8–24 (23.4)	16.3–20 (18.7)
	Female						
<i>Sikatok, Sindoro</i>							
Male	23	117–132 (124.3)	84–101 (91.8)	32–36.2 (34.6)	22–25 (23.6)	18–20.8 (19.3)	
	Female	12	115–122 (118.3)	86–92 (88.1)	31.8–35.6 (33.9)	22–25 (23.8)	18.3–21 (19.6)
<i>T. p. stresemanni</i>							
Lawoe	Male	3	124–133 (129.0)	93–100 (97.0)	34.2–35.5 (34.9)	23.2–24.3 (23.8)	18.9–19.5 (19.2)
	Female	2	126, 129 122, 123	90, 97 88, 92	34.5, 35 33, 35	24, 24.5 23, 24	18.6, 20 17.8, 19.2
<i>T. p. whiteheadi</i>							
Tengger	Male	2	126, 129	90, 97	34.5, 35	24, 24.5	18.6, 20
	Female	2	122, 123	88, 92	33, 35	23, 24	17.8, 19.2

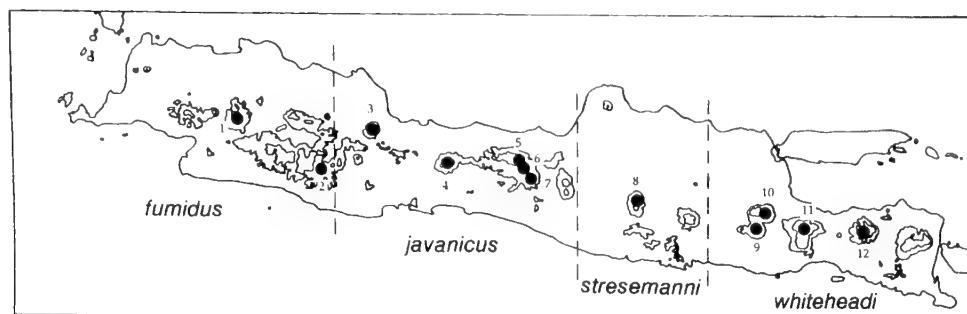


Fig. 14. Range of *Turdus poliocephalus*. *T. p. fumidus*: 1. Pangerango-Gedeh; 2. Papandajan. *T. p. javanicus*: 3. Tjerimai; 4. Slamat; 5. Prahoe; 6. Sindoro; 7. Soembing. *T. p. stresemanni*: 8. Lawoe. *T. p. whiteheadi*: 9. Kawi; 10. Ardjoeno; 11. Tengger Highlands; 12. Ijang Highlands.

From west to east, the subspecies and their characters are (Fig. 14):

***T. p. fumidus*:** rust colored belly, with the lower abdomen white; head, and especially pileum,dark. Males have possibly, on average, a darker grey brown throat and upper breast than females. Some birds show a few white feathers on the throat (subadult?). Juveniles have light rust colored underparts, the breast and flanks heavily spotted with blackish brown.

***T. p. "biesenbachi":*** like *fumidus*, but seems to have, on average, a very slightly lighter throat and upper breast. The difference (also the only one from *fumidus* given by Stresemann, 1930b) is so subtle that I do not believe it to merit expression in nomenclature. Note that Bartels, Jr. (1938a) already expressed doubt about the validity of *biesenbachi* and concluded, "Eine grösse Serie vom G. Papandajan wäre . . . erforderlich, um die Merkmale der Papandajan-Vögel vollends klarzustellen."

***T. p. javanicus*:** the rust color on the belly limited to the middle part. Head, especially pileum and ear coverts, generally less dark than in *fumidus* (there is considerable variation); in some individuals conspicuously pale. The whole plumage seems a little browner, less grey, than in *fumidus*. No sexual dimorphism in plumage. One male (RMNH no. 64093) has hardly any rust color and, therefore, resembles *stresemanni* but is darker on the pileum, mantle, etc. White central streaks of the under tail coverts narrow, less developed than in other subspecies.

***T. p. stresemanni*:** no rust color on the belly. Head variable, but rather light. A juvenile has light dull rust colored, heavily spotted underparts and is very similar to juveniles of *fumidus*. It is interesting that the juvenile has this rust color, which is almost completely absent in adults.

***T. p. whiteheadi*:** belly entirely rust colored, like *fumidus*, but the color even a trifle darker, and extending a little farther onto the lower breast. Head, especially pileum, sides of the head, and throat lighter than *fumidus*. Dorsally clearly distinguished from *fumidus* by the less dark pileum. No juveniles available.

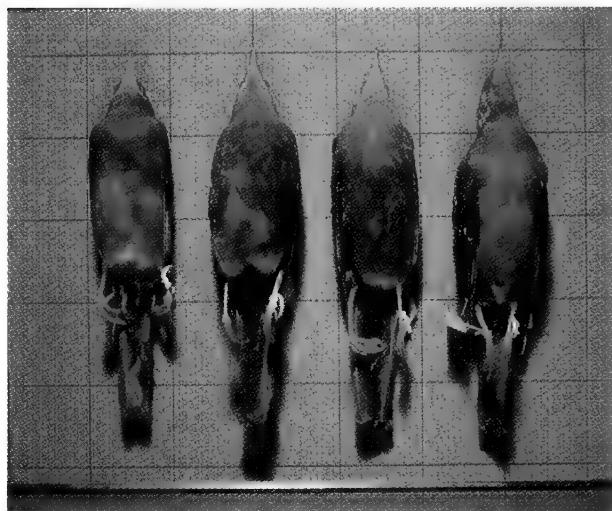


Fig. 15. *Turdus poliocephalus* from Java. Top, dorsal aspect. From left to right: *T. p. fumidus* (♂, 12 IX 1903, summit Mandala-wangi, Pangerango, RMNH no. 64028), *T. p. javanicus* (♂, 1 VII 1912, Sikatok, RMNH no. 64083), *T. p. stresmanni* (♂, 14 VI 1933, La-woe, RMNH no. 64015), *T. p. whiteheadi* (♀, 13 X 1938, Ngadiwono, Tengger, RMNH no. 64017). Bottom, ventral aspect; same specimens and relative positions.

## TEMMINCK'S BABBLER

### *Trichastoma pyrrogenys*

*Myiothera pyrrogenys* Temminck, 1827, Recueil d'Ois., 2 (livr. 74), pl. 442, fig. 2—plusieurs districts de l'île de Java; restricted to Bantam by Kloss (1931: 346).

*Aethostoma pyrrogenys besuki* Kloss, 1931, Treubia, 13: 346—Tamansari, near Banjoewangi, East Java, 1,600 ft.

## Material Examined

**West Java:** "Java" (male, female, presumed types), Djampang Tengah (10 males), Pangerango (9 males, 5 females), Gng. Massigit (male), Tjibarenno (male), Bandjar (2 males).

**East Java:** Raoeng, Besoeki (2 males, 1 female).

In Kloss's diagnosis of *A. p. besuki* it is differentiated from *A. p. canicapillum* of Borneo, rather than from nominate *pyrrogenys* of West Java. He fails to inform us about the number of specimens on which the new form was based, but according to Kuroda (1933: 274) only the type specimen was known. The three specimens examined by me, admittedly not a large series, appear absolutely identical with material from West Java, and there can be no possible excuse for the continued recognition of *besuki*.

There is a huge gap in the recorded distribution, between West Java and eastern East Java (between Bandjar, and Raoeng, ca. 620 km), but there is no reason to assume that the species is absent from the intervening regions.

## HORSFIELD'S BABBLER

*Malacocincla sepiaria*

*Brachypteryx sepiaria* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 158—Java.

*Turdinus sepiarius* (Horsf.) var. *minor* Meyer, 1884, Zeitschr. ges. Ornith., **1**: 210—Java.

Most material examined by me is from western West Java, east to Bandoeng, one is from Sapoeran, Bagelen (Middle Java), and eight are from Idjen/Raoeng (East Java). A continuous distribution may be assumed, at least in the recent past.

I have compared material from West Java and from East Java but have failed to find any difference, either in colors or in measurements. The same conclusion was reached long ago by Van Oort (1910: 136) and again, with some hesitation because of inadequate material, by Hoogerwerf (1966a). There is some individual variation in the color of the pileum, from more olive brown (similar to the back), to more greyish. This is not a sexual difference, nor is it a geographical one. The pale heads of Horsfield's type specimens, commented upon by Kloss (1921b: 220), were undoubtedly the result of bleaching due to lengthy exposure to light.

Without prejudice I have accepted the resurrection of the generic name *Malacocincla* for this and related short tailed babblers, as proposed by Ripley and Beehler (1985). It appeals to my sense of humour to see, time and again, the

thesis confirmed that when, in times of nomenclatural upheaval, one sticks to the old names, thirty years later one is again entirely up-to-date.

## CHESTNUT-BACKED SCIMITAR BABBLER

### *Pomatorhinus montanus*

*Pomatorhinus montanus* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**:  
165—Java = Mts. Merbaboo and Prahu.

*Pomatorhinus montanus ottolanderi* Robinson, 1918, J. Fed. Malay St. Mus., **7**: 235—Sodong Gerok, Idjen Massif, 3,900 feet, near Banjoewangi, Eastern Java.

### Material Examined

**West Java** (*montanus*): Halimoen (1), Salak (4), Pangerango (61), Tjibodas, Gedeh (6), Tangkoeban Prahoe (9), Summit Manglajan, 1,812 m (4); Tjinjiroean, Malabar (4), G. Baroekaret (1), Tirtasari (6), Tjibitoeng (1), Tjisaroeni (1).

**Central Java** (*montanus*): Kaligoea, Slamat (3).

**East Java** (*ottolanderi*): Ngadiwono, Tengger (5), Soember Wringin, Raoeng, Idjen (5).

**Bali** (*ottolanderi*): Bratan (7).

Further records of nominate *montanus* are in West Java from Tjiomas, Mt. Karang (Robinson and Kloss, 1924: 285), Mt. Papandajan (Stresemann, 1930c), and Mt. Tjerimai (Kuroda, 1933: 262). In Central Java from Mts. Prahoe and Merbaboe (type localities, cf., Horsfield, 1822: pl. (41)). In East Java from Mt. Lawoe (Voous, 1948: 95), where still *montanus*, and Mt. Ardjoeno (Hartert, 1896; Kuroda, 1933), where apparently variably intermediate between *montanus* and *ottolanderi*. Further records of *ottolanderi* in East Java are from the Ijang Highlands (Kooiman, 1941), Sodong Jerok, and Tamansari, Idjen Highlands (Robinson and Kloss, 1924: 285).

Previous authors have either given nominate *montanus* the range of West Java and *ottolanderi* that of East Java, leaving one to guess about the middle part of the island (Bartels, Jr. and Stresemann, 1929: 127), or they placed nominate *montanus* in western and central Java and *ottolanderi* in eastern Java and Bali (Kuroda, 1933: 262-263; Deignan, 1964: 274). The latter is correct but still not very accurate (Fig. 16). Delacour (1947: 251) has reversed the ranges of the two subspecies.

The difference between the two subspecies is not particularly striking (Fig. 17). In the nominate race the white supercilium is fully developed, from the base of

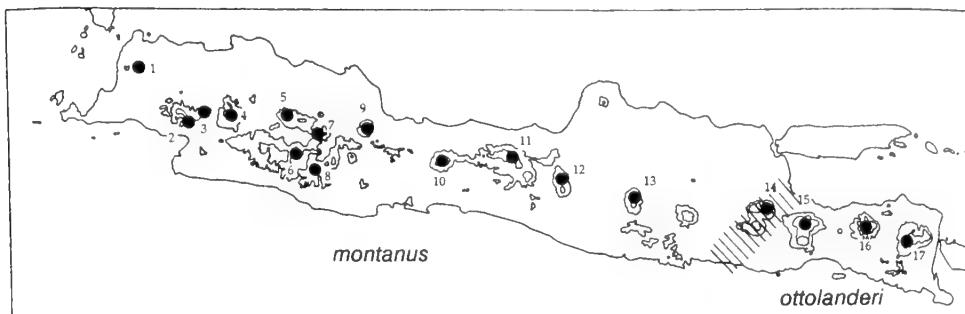


Fig. 16. Range of *Pomatorhinus montanus*. *P. m. montanus*: 1. Karang; 2. Halimoen; 3. Salak; 4. Pangerango-Gedeh; 5. Tangkoeban Prahoe; 6. Malabar; 7. Manglajan; 8. Tjisaroeni, Papandajan; 9. Tjerimai; 10. Slamat; 11. Prahu (Horsfield); 12. Merbaboo (Horsfield); 13. Lawoe; 14. Ardjoeno (intermediate between nominate *montanus* and *ottolanderi*). *P. m. ottolanderi*: 15. Tengger Highlands; 16. Ijang Highlands; 17. Idjen Highlands.



Fig. 17. *Pomatorhinus montanus*. Top: *P. m. ottolanderi*. Bottom: *P. m. montanus*. Note subspecific difference in the development of the supercilium.

the maxilla backward, whereas in *ottolanderi* the anterior part of the white supercilium, between bill and eye, is lacking, the supraloral region being feathered black, like the lores. The width of the anterior part of the white supercilium in birds of the nominate race is somewhat variable, although it is always present. Sometimes it is even broken by black just above the anterior margin of the eye. On the other hand, several specimens of *ottolanderi*, even from Bali, have a few small white supraloral feathers present. Surprisingly, the nominate race ranges to as far east as Mt. Ardjoeno. Kuroda (1933: 263) found this so unlikely that he

suspected an error in labelling. Hartert (1896: 539), recorded from the same locality three birds in which the white stripe behind the eye did “not fully join the white feathers in front of the eye.” This looks like a good description of intermediate birds, but it is puzzling that only a few pages further on he states that specimens from Bali are exactly like those from Mt. Ardjoeno, suggesting that his Ardjoeno birds were *ottolanderi*. The most likely explanation, on the basis of this conflicting evidence, is that Mt. Ardjoeno is inhabited by a variable intermediate population—even more variable than the two subspecies are elsewhere.

## WHITE-BIBBED TREE BABBLER

### *Stachyris thoracica*

*Pitta thoracica* Temminck, 1821, Recueil d’Ois., 2 (livr. 3), pl. 76—  
Java = Western Java.

*Stachyris orientalis* Robinson, 1918, J. Fed. Malay St. Mus., 7: 236—  
Sodong Jerok, Idjen Massif, 3,900 feet, near Banjoewangi, East Java.

## Material Examined

**West Java** (*thoracica*): “Java” (2 syntypes), “Sumatra” (errore) (2), Halimoen (1), Salak (2), Tjipetir (1), Pangerango (46), Gedeh (1), Tjibodas-Gedeh, 1,400 m (1), Tangkoeban Prahoe (2), Tjibeureum (2), Tjinjiroewan (4).

**Middle Java** (*orientalis*): southern foothills of G. Slamat (2, ZMA nos. 5016, 4693), Lawoe, 1,500 m (1, ZMA no. 4901).

**East Java** (*orientalis*): Gondang (1), Soember Wringin (4). Literature records add Sodong Jerok and Tamansari (Robinson and Kloss, 1924).

*Stachyris thoracica* is an endemic species of the middle levels (ca. 500–1,500 m) of Java. Old records from Sumatra have never been confirmed reliably and cannot be accepted (cf., Mees, 1986: 156; Van Marle and Voous, 1988: 171).

There are two well-differentiated subspecies, the nominate in West Java and *orientalis* in Middle Java and the extreme east (Fig. 18). The main differences between the subspecies are that *orientalis* has the crown and nape dark slate, clearly different from the brown mantle, whereas in nominate *thoracica* the head is similar in color to the mantle (Fig. 19). The mantle of *orientalis* is slightly lighter brown than that of *thoracica*. On the underside in *orientalis* the broad white band across the chest (in the literature usually, incorrectly, described as a collar) is bordered below by a black band; this black band is absent in *thoracica*.

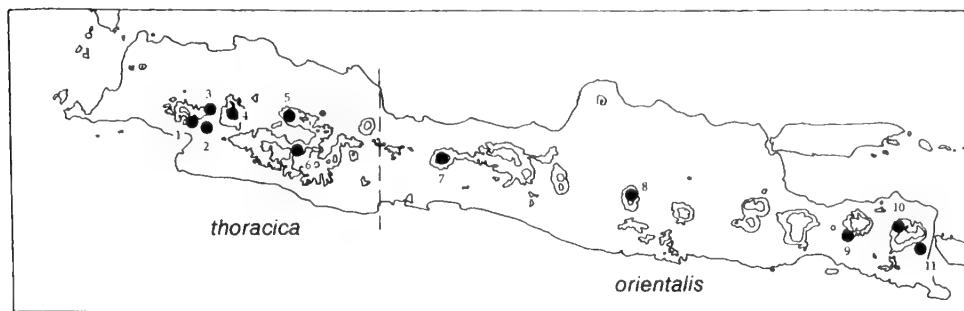


Fig. 18. Range of *Stachyris thoracica*. *S. t. thoracica*: 1. Halimoen; 2. Tjipetir; 3. Salak; 4. Pangerango-Gedeh; 5. Tangkoeban Prahoe; 6. Malabar. *S. t. orientalis*: 7. Slamat; 8. La-woe; 9. Gondang; 10. Soember Wringin, Idjen; 11. Tamansari, Idjen.



Fig. 19. *Stachyris thoracica* in dorsal, ventral and lateral aspects. In each photograph, top *S. t. orientalis*, bottom *S. t. thoracica*.

The absence of black spotting in the middle of the white band has also been considered a character of *orientalis* but there is individual variation that will be discussed below.

Records of the nominate race from Middle Java by Kuroda (1933: 282) and Deignan (1964: 314) would presumably be based on Dammerman's (1929: 56)

table, and are not supported by any evidence I know of. Voous (1948) identified specimens from Mts. Slamat and Lawoe as *orientalis*, but commented that two specimens from the Slamat foothills showed an approach to the nominate race as “in both specimens the white collar is somewhat encroached in the middle by the black of the throat, as is found in the western race *thoracica*.” I have examined these same two specimens and agree with Voous that they are undoubtedly referable to *orientalis*. However, I found that the character of dark spotting on the white breast band is of questionable value; three out of five specimens of *orientalis* from eastern Java also show some spots, whereas in specimens of nominate *thoracica* from Western Java spotting is not always present. Moreover, the visibility of the character, which consists of some mostly white feathers having dark centers, is influenced by the way specimens have been prepared; the longer the neck, the more visible become the spots. This is the case with the Slamat specimens.

## CRESCENT-CHESTED BABBLER

### *Stachyris melanothorax*

*Myiothera melanothorax* Temminck, 1823, Recueil d’Ois., **2** (livr. 31), pl. 185, fig. 2—Java. Restricted to western Java by Robinson (1918: 236) and inferentially further restricted to G. Gedeh by Stresemann (1930b).

*Stachyridopsis melanothorax intermedia* Robinson, 1918, J. Fed. Malay St. Mus., **7**: 236—Sodong Gerok, Idjen Massif, 3,900 feet, near Banjoewangi, eastern Java.

*Cyanoderma melanothorax albogularis* Stresemann, 1930, Ornith. Monatsber., **38**: 148—Papandajan 1,500 m.

*Cyanoderma melanothorax mendeni* Neumann, 1935, Bull. Brit. Ornith. Club, **55**: 136—Indromajoe, east of Cheribon, north coast of west central Java (recte: Indramajoe, see below).

## Material Examined

**West Java (*melanothorax*):** “Java”(5, including the two syntypes of the species. All five belong to the nominate race and may be presumed to be from West Java), Goenoeng Koepak, Bantam (1), Bolang (1), Salak (1), Pangerango (44), Gedeh (2), Halimoen (3), Djampang (1), Djampang tengah (3), Artjamanik north-east of Bandoeng, 1,500 m (1),

Tangkoeban Prahoe near Bandoeng, 1,600 m (2), Tangkoeban Prahoe (3), Tjinjiroewan (5), Tjisaroeni (1), Tjipanas near Garoet, 800 m (1).

**Middle Java** (*melanothorax*): Kaligoea, Slamat (2), Sikatok, Sindoro (1).

**East Java** (*intermedia*): Klatakan (2), Dampar (1), Raoeng (4).

**Bali** (*baliensis*): Boelian (1), Bratan, 1,200 m (3).

This skulking inhabitant of lowland and (mainly) mid-mountain forest is endemic to Java and Bali. Five subspecies have been described, four from Java and one from Bali.

The last subspecies to be added is *mendeni*. In the description of this race Neumann (1935) is hazy in his geography. The type locality is given as "Indromajoe, east of Cheribon, north coast of West Central Java." There is no place called "Indromajoe,": evidently Indramajoe is meant and this place is not east, but about 45 km northwest of Cheribon, on the lower course of the Tjimanoek/Cimanuk, in West Java, not Central Java. Neumann expected that more subspecies would remain to be discovered in Java, "As *Cyanoderma melanothorax* seems to be a very plastic species, other races may still be expected on the extinct volcanoes of Eastern Java and, perhaps, in the forests of the south coast." This also is very vague. It remains unexplained why the species should show any special attachment to extinct volcanoes (of which there are not that many in eastern Java, the large mountain massifs having active volcanoes).

Hoogerwerf (1947a) evidently was influenced by Neumann's opinion (which he quotes) about the plasticity of the species, for he not only accepts all the previously described subspecies (although he does express doubt about the validity of *mendeni*), but suggests that there are several more, which, because of the paucity of his material, he refrained from naming.

Entirely different is the approach by Jany (1953a), "Man sollte nicht jeder Vogelpopulation der einzelnen Vulkankegel Javas nur wegen einer unbedeutenden Farbschattierung einen besonderen Namen geben und noch dazu, wenn hierbei weder die Höhenlage noch eine gewisse individuelle Variabilität berücksichtigt worden ist." Jany drew attention to the great vertical distribution of the species, from sealevel to ca. 2,500 m. Jany proposed to retain in Java (he had no material from Bali) two subspecies, *S. m. melanothorax* and *S. m. albogularis*. He divided the species vertically into a subspecies from the lower regions, with warm brown upperparts, and a pale chamois throat, and a subspecies from the higher levels (particularly in West Java), with colder brown, more olive upperparts, and a white throat. To the latter subspecies he could ascribe only two of his specimens, one from Mt. Tjerimai (2,500 m) and one from Telaga Warna near the Poentjak Pass, Mt. Gedeh (1,400 m). Presumably because of their white throats, he considered the name *albigularis* applicable to these birds. It is edifying to see how

Hoogerwerf and Jany, on the basis of exactly the same 12 specimens in the collection of the MZB, arrived at such radically different conclusions.

Jany's paper was not considered by Deignan (1964: 316) who listed, without comment, all five subspecies. That is, as far as I know, the last word to have been written about the geographical variation of the species.

In the material listed above, I am able to distinguish three subspecies, characterized as follows:

**S. m. melanothorax:** crown, upper wing coverts and outer edges to the remiges, reddish chestnut; upperparts warm brown; supercilium almost white; some black on the forehead, above the lores and the supercilium; sides of the head and of the breast light grey; throat white with a faint tinge of pale chamois, on each side with a narrow black streak; a broad black bar across the upper breast; lower breast dirty greyish, lower underparts buffy brown. Specimens from West and Middle Java belong to this subspecies.

**S. m. baliensis:** forecrown only slightly tinged with chestnut; upper wing coverts chestnut, but paler than in *melanothorax*, and the outer margins of the remiges much paler; upperparts colder brown; supercilium pale grey; the amount of black on the forehead apparently somewhat reduced; sides of the head, the whole breast and lower underparts buffy brown; throat pale chamois, on each side with a poorly developed black streak; the black breast band reduced to a few black streaks or spots, or a single central dot. Confined to Bali.

**S. m. intermedia:** this aptly-named subspecies has the upperparts similar to *baliensis*, but the crown is definitely more chestnut, supercilium almost white; sides of the head and of the breast buffy grey; throat white with a narrow black streak on each side, and with a broad black bar separating it from the upper breast, as in *melanothorax*; lower underparts buffy brown. Specimens from eastern East Java belong to this subspecies.

One could dismiss *intermedia* as an intermediate between the two well-marked subspecies *melanothorax* and *baliensis*, and as such not consider it worth its own name. In my opinion, however, there are good grounds for its recognition. For one thing, it is in several aspects closer to *melanothorax* than to *baliensis*, only a stone's throw away. When the well-marked *baliensis* is left out of consideration, the differences between *melanothorax* and *intermedia* are still quite enough for recognition of the latter in nomenclature.

There are no differences in measurements between the subspecies (Table 12; see, also, Jany, 1953a).

Further to the distribution, there is little doubt that *S. melanothorax*, with its huge vertical range, occurred throughout Java until recently (Fig. 20). The localities provided by the RMNH material, enumerated above, leave a large gap between Mt. Sindoro (Middle Java, *melanothorax*) and the Idjen Highlands (East Java, *intermedia*), conveniently separating the subspecies *intermedia* from the nominate race. However, from the MZB material discussed by Hoogerwerf and

Table 12

Locality	Sex	No.	Wing	Stachyris melanothorax Tail	Tarsus	Entire Culmen	Exposed Culmen
<i>S. m. melanothorax</i>							
<b>West Java</b>	Male	12	58–62 (59.6)	48.5–53 (50.8)	20.5–22.7 (21.3)	16–18 (17.2)	13.5–15 (14.3)
	Female	12	55–58 (56.9)	46–51 (48.8)	20.4–21.3 (20.8)	14, 16–17.5 (16.5)	12, 13–14.8 (13.8)
<i>S. m. intermedia</i>							
<b>East Java</b>	Male	2	60, 60 54–59.5 (56.5)	46+, 50 46–51 (48.6)	20.7, 21.4 19.5–21 (20.4)	17.2, 18.5 16–17.6 (17.1)	15, 15.1 13–14.2 (13.6)
	Female	5					
<i>S. m. baliensis</i>							
<b>Bali</b>	Male	2	56, 59	50, 50	21, 21.6	17, 17.9	13, 14.8
	Male juv.	1	55	46	21.8	15.8	11.6
	Female	1	56	49	21	16.9	13.9

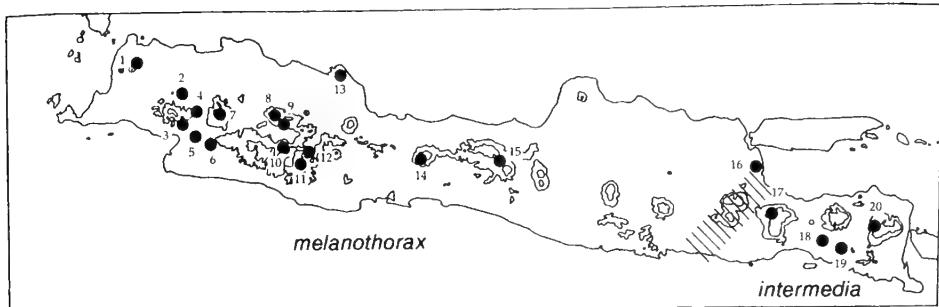


Fig. 20. Range of *Stachyris melanothorax*. *S. m. melanothorax*: 1. Goenoeng Koepak; 2. Bolang; 3. Halimoen; 4. Salak; 5. Djampang Tengah; 6. Pasir Kananga; 7. Pangerango-Gedeh; 8. Tangkoeban Prahoe; 9. Artjamanik; 10. Tjinjiroean, Malabar; 11. Papandajan; 12. Garoet; 13. Indramajoe; 14. Slamat; 15. Sikatok, Sindoro; 16. Sidoardjo. *S. m. intermedia*: 17. Kletak, Tengger; 18. Klatakan; 19. Dampar; 20. Soember Wringin, Idjen.

placed by Hoogerwerf, but Jany, quaintly misspelling it as Sidaardja, confused it with a locality of the same name in the Sultanate of Soerakarta). From Hoogerwerf's fairly comprehensive description of the two specimens from Sidoardjo, it looks as if they might be nearer to the nominate race than to *intermedia*.

A characteristic of this species is a complete lack of sexual dimorphism in plumage. Also, juvenile birds do not differ from adults, except perhaps in being very slightly duller in plumage. In the nominate race at least, there is a slight difference in size between the sexes, the females being a little smaller than the males. In the subspecies *intermedia* and *baliensis* a similar sexual difference may be assumed, but cannot be established because of insufficient material. In species lacking sexual dimorphism in plumage, some missexing is also to be expected.

Although it is not directly relevant, I should like to draw attention to two specimens with a somewhat aberrant plumage. One (male, 4 IX 1922, Halimoen, RMNH no. 64250) has a few small white feathers among the black feathers of the anterior forehead. The other (female, 6 IV 1903, Pangerango, RMNH no. 64205) is far more interesting. It seems to lack all black pigment, so that the anterior forehead is white; the upperparts and the tail are of a dull, washed-out brown, being brighter, more chestnut, only on the sides of the head, above the supercilium, on the upper wing-coverts, and on the outer edges of the remiges. The black bar across the upper breast, as well as the black lateral margins to the white throat, are entirely lacking. Strangely, the grey of the sides of head and breast is present; this seems to be a different pigment.

## RUFOUS-FRONTED LAUGHING THRUSH

### *Garrulax rufifrons*

*Garrulax rufifrons* Lesson, 1831, *Traité d'Ornith.*, p. 648—Java, restricted to Mount Salak (lat. 6°42'S., long. 106°44'E.) by Deignan (1964: 350).

*Garrulax rufifrons slamatensis* Siebers, 1929, *Treubia*, **11**: 150—Kaligua, G. Slamat (M.-Java).

Nominate *Garrulax r. rufifrons* is a mountain bird with a wide distribution in West Java (Fig. 21). The 63 specimens in the RMNH collection are from the mountains Halimoen, Endoet, Salak, Pangerango-Gedeh, Tangkoeban Prahoe, Malabar (Tirtasari) and Tjerimai.

Literature records add Mt. Karang (Tjiomas and Oedjoengteboe; Robinson and Kloss, 1924: 285), Mt. Papandajan (Stresemann, 1930c), and near Garoet (Siebers, 1929). It may be assumed to occur throughout the highlands of West Java.

The second subspecies, *G. r. slamatensis*, on the other hand, is apparently confined to Mt. Slamat in western Central Java. It is conspicuously different from the nominate race, in that not only the frons (and perhaps a few feathers on the chin), is rufous, but also the throat and upper breast. There is some individual variation, as pointed out by Voous (1948: 96). The material examined consists of 3 specimens: 1 male (4 I 1916, Kaligoea, RMNH no. 14039, the holotype of *G. r. slamatensis*) and 2 of indeterminate sex (21 and 28 III 1925, near Poerwokerto, ZMA nos. 4610, 4739). The dates of collecting of the two ZMA specimens are taken from their original labels; August 1925, given by Voous, is an error.

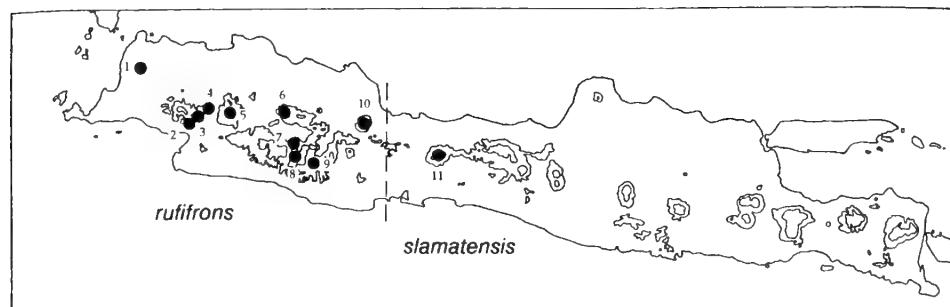


Fig. 21. Range of *Garrulax rufifrons*: The nominate race is widely distributed in the highlands of West Java; the subspecies *slamatensis* is confined to Mt. Slamat in western Middle Java. *G. r. rufifrons*: 1. Karang; 2. Halimoen; 3. Endoet; 4. Salak; 5. Pangerango-Gedeh; 6. Tangkoeban Prahoe; 7. Tirtasari, Malabar; 8. Wajang; 9. Papandajan; 10. Tjerimai. *G. r. slamatensis*: 11. Slamat.

Where this species occurs it is common, noisy, and conspicuous. Therefore, I believe that it is genuinely restricted to the western half of Java, eastward to Mt. Slamat, but not beyond.

## ZITTING CISTICOLA

### *Cisticola juncidis*

*Cisticola fuscicapilla* Wallace, 1864, Proc. Zool. Soc. Lond. (1863), p. 489—Timor; Flores. Restricted to Delli (recte: Dilli), E. Timor by Lynes (1930: 633).

*Cisticola juncidis malaya* Bartels, Jr. and Stresemann (ex Lynes, MS), 1929, Treubia, 11: 133—Klang (Malakka); W.-Java.

*Cisticola juncidis malaya* Lynes, 1930, Ibis (12) 6, *Cisticola* Suppl., p. 92—Klang, Malay Peninsula.

## Material Examined

**West Java:** Goenoeng Koepak, Bantam (1), Dramaga (3), Pangerango (6), Tjitamijang (5), Tjidjoedjoeng, near Buitenzorg (1), Tjabang Tempajan, Krawang (1), Kali Boengin (1), Pondok Tissok (1), Tjibaloeng, near Tjaringin (4), Tjaringin (1), Tjidjengkol, near Bandoen (1), Bandjar (3).

**Middle Java:** Tjerme (2), Samboengredjo, Rembang (1). Gedangan, Randoeblatoeng (1), Boelbanjoe (?) (1), no exact locality (1).

**East Java:** Dampar (1).

The inclusion of East Java in the range of *fuscicapilla*, and of West Java in the range of the newly-described *malaya*, was due to Lynes (1930: 94), "We have seen no specimens from anywhere in the middle part of Java, but found no difficulty in identifying all the specimens from eastern Java with *fuscicapilla* and from western Java with *malaya*." This seems clear enough, but on the next page, Lynes records under specimens from East Java studied by him only an unspecified number from the Kangean Islands, and not a single one from East Java proper. Lynes's Kangean material presumably consisted of the two specimens obtained there by Prillwitz in 1901 (cf., Hartert, 1902: 437), as no more had been collected there at that time.

In this connection, the statement about "all the specimens from eastern Java" which he examined, becomes very puzzling, as by his own evidence Lynes did not examine any material from the mainland of eastern Java. I am forced to conclude that Lynes's East Java equals the Kangean Islands; perhaps he thought that these islands were closer to Java than they are. It seems, therefore, that the as-

sumption of the occurrence of two subspecies of *C. juncidis* in mainland Java, which has become generally accepted, lacks any foundation.

Apparently no ornithologist has previously studied material from Middle Java and from East Java. Bartels, Jr. and Stresemann (1929: 133) listed *C. j. fuscicapilla* for East Java on the authority of Lynes, as did Kuroda (1933: 246), who was, understandably, misguided by Lynes (1930: 95) and believed that, "Many specimens were collected by many collectors but none of the exact localities of Java published." Hoogerwerf (1948c) had no material from East Java; his specimens of *fuscicapilla* were from the Lesser Sunda Islands Sumbawa, Flores, and Sumba.

*C. j. malaya* was named unintentionally, but validly, by Bartels, Jr. and Stresemann, with a year priority over the same name published by Lynes.

## BAR-WINGED PRINIA

### *Prinia familiaris*

*Prinia familiaris* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 165—Java.

*Motacilla olivacea* Raffles, 1822, Trans. Linn. Soc. Lond., **13**: 313—Sumatra.

*Orthotomus prinia* Temminck, 1836, Recueil d'Ois., **3** (livr. 101), text to pl. 599—Java.

## Material Examined

**Western West Java:** from Bandoeng westward (23 males, 20 females).

**Central Java:** Gedangan, Semarang (male), Seneng, Semarang (female), Tjiplokan, desa Soemberdja (2 ?), Tjerme, Tjepoe, Res. Rembang (female), Ngoelang, Res. Rembang (female).

**East Java:** Klatakan (female), Idjen (male), Soember Wringin, Idjen (3 females).

**Bali:** Gilimanoek (male), Bratan, 1,200 m (3 males).

Kloss (1931: 354) was the first to distinguish two subspecies in Java. "*Prinia familiaris* (Horsf.) came from Java and was described in 1820; a little later Raffles named the Sumatran bird which, with West Javan birds, differs from those of East Java in having the abdomen a rather brighter yellow. By elimination, therefore, East Java becomes the type locality of *Prinia f. familiaris*; and it is here further restricted to the province of Besoeki where Horsfield did much of his collecting." Kloss made no reference to the type material of *P. familiaris*, which is

in the British Museum (cf., Warren and Harrison, 1971: 173). Note that the only distinguishing character given by Kloss is the "rather brighter yellow" abdomen of the western birds.

Hoogerwerf (1948d), on the basis of more material (West Java 16, East Java 6, Bali 1), amplified Kloss's diagnosis. He concluded that the subspecies "*olivacea*" could be maintained on the basis of having: the lower breast and belly tinged a brighter yellow, sides of the breast darker, and more extensively dark, so that the area of white on the center of the breast is less extensive. The bill on average is a little heavier and broader at its base. The tail possibly averaging a trifle longer.

Since 1931 the existence of two subspecies in *Prinia familiaris* has been generally accepted, with the only alteration being that the name *olivacea* for the western subspecies was found to be preoccupied and was replaced by *prinia*.

I have compared the material listed above and feel unable to confirm any of the claimed differences. It may be assumed that in the more limited material examined by Kloss and by Hoogerwerf, the full scala of the considerable individual variation was not present. In the case of the dark sides of the breast, the method of preparing may also have had an influence (namely, how much of the dark sides is concealed by the wings). My inability to confirm differences is not only true for color, but also for bill shape and size, and the length of the tail.

There is no difference in plumage between the sexes that I can detect. Juvenile birds, which have been excluded from the series, seem to have a very slightly softer plumage, a trifle paler yellow underparts, and the dark on the sides of the breast is also less developed. I have also compared a series from Sumatra, which (in agreement with all previous authors), I found indistinguishable from Java birds. Therefore, my conclusion is that *Prinia familiaris* is a monotypic species.

Although when no subspecies are admitted the matter is no longer of practical interest, a few remarks about the nomenclature of the supposed western subspecies are in order. The question is, whether *Orthotomus prinia* Temminck may count as the description of a new species, or whether it was proposed merely as a replacement name for *Prinia familiaris*. Is the latter the case, then the type specimens of *O. prinia* are the same as the type specimens of *P. familiaris*. Also, the type locality of *O. prinia* follows that of *P. familiaris* to Besoeki, East Java, so that the name is not available for the western populations (cf., ICZN, 1985: art. 72 (e)). Compare the very similar case of *Criniger bres* on a preceding page. Another line of reasoning is, however, that although Temminck clearly states that *O. prinia* is the same as *P. familiaris* and that *P. familiaris* is not suitable, as he does not recognize *Prinia* as a valid genus, nevertheless, he does not state expressly that *O. prinia* is a substitute name or a nomen novum for *P. familiaris*, so that *O. prinia* may count as a new species, with which *P. familiaris* is only subjectively identified. I believe that this view, though shaky, is defensible and it was evidently the one taken by Watson (in Watson, et al., 1986a: 140) when he introduced *O. prinia*.

It means that for the types we must look among the material in the RMNH collection. I have found three specimens which would have been in Temminck's hands when he described *O. prinia*, viz., a male and a female, merely labelled Java, leg. Kuhl and van Hasselt; the names of the collectors place them in West Java, and date them from 1821/1823. The third specimen, sex not recorded, October 1831, Patjet, Java, leg. S. Müller. The date of this specimen can be further refined, for S. Müller and the botanist P. W. Korthals were in Patjet on 15 October 1831 (cf., van Steenis-Kruseman, 1950: 296). Watson has restricted the type locality of *O. prinia* "to Jakarta, western Java." As one of the syntypes has an exact locality, I think that the type locality should be corrected to Patjet (on the eastern slope of Mt. Gedeh, at 1,100 m, 6°45'S, 107°03'E), by those who regard *O. prinia* as more than just a nomen novum for *Prinia familiaris*.

## OLIVE-BACKED TAILORBIRD

### *Orthotomus sepium*

*Orthotomus sepium* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 166—Java.

*Edela ruficeps* Lesson, 1830, Traité d'Ornith., p. 309—la côte nord-ouest de la Nouvelle-Hollande (Labillardière) = Soerabaja (Stresemann, 1953:97, 106).

Since the introduction of ternary nomenclature, *Orthotomus sepium* and *Orthotomus ruficeps* (until 1932 known as *O. cineraceus*) have been held to be conspecific by many authors, including Bartels, Jr. and Stresemann (1929: 133), Chasen (1935: 246-247), and Delacour (1947: 280), but note that Delacour overlooked nominate *sepium* and records from Java only *ruficeps*. Hoogerwerf (1948b) presented sound arguments for regarding the two as different species but reverted to treating them as conspecific in a later paper (Hoogerwerf, 1962c). As reason for this change of opinion, he makes a vague reference to the occurrence of "mixed populations" on the islands of Sangijang or Dwars-in-de-Weg (Strait Sunda) and Bawean, which he intends to discuss later. Although Hoogerwerf was a prolific writer, I have been unable to find a discussion of these "mixed populations" in any of his later papers. In Hoogerwerf's (1967b: 83-84) paper on the birds of Bawean, where one would have expected it, there is no mention of the problem, only a reference to his two earlier papers listed above. The description of the Bawean birds as a new subspecies, under the name of *O. sepium baweanus*, by Hoogerwerf (1962c), would seem to preclude "mixed populations" on Bawean referred to in the same paper.

On the basis of my own experience, both in the field and in the museum, I regard *O. sepium* and *O. ruficeps* as different species, and this view has also been

accepted by Watson (in Watson, et al., 1986a: 183, 184). I could leave it at this, but give in to the temptation to provide some further discussion of these interesting species.

Vorderman (1898: 89) gave under the name *O. cineraceus* (= *O. ruficeps*), a full description of a male in his collection, presumed to be from Makassar, Celebes. The specimen was sent to Leiden where the industrious Finsch provided it with a new label. Finsch (1901: 217) also corrected the identification to *O. sepium*, and added, "Celebes ist ein neuer interessanter Fundort." Later authors have ignored the record, in my opinion rightly. Vorderman must have made an error in labelling.

*O. sepium* is a common inhabitant of cultivated country throughout Java, ranging eastward to Madura, Bali, and Lombok. On Prinsen Eiland, in Strait Sunda, a slightly larger subspecies, *O. s. sundaeicus*, occurs, based by Hoogerwerf (1962b) on some slight plumage characters and mainly on "considerably larger" size. To support this, Hoogerwerf supplied series of measurements as follows. Mainland of West Java (*O. s. sepium*): wing 25 males 44-49, 17 females 42-46, tail 23 males 37-44, 16 females 34-41, and Prinsen Eiland (*O. s. sundaeicus*), wing 12 males 48-52, 7 females 46-49, tail 11 males 45-49, 7 females 38-42 mm. The difference seems enough for subspecific recognition, although I note that Rensch (1931: 575) gave for specimens from Lombok, the other end of the range of nominate *sepium*, 3 males wing 46, 49, 51, tail 42, 41, 44 mm; 2 females wing 45, 47, tail 37, 40 mm. Hoogerwerf (1948b) mentioned that a Lombok specimen was the largest of his very modest series, but he failed to give its measurements. The RMNH collection contains only a single specimen from Lombok, not sexed, but by plumage an adult female; it is large for its sex, the bill being especially long. Its measurements, and those of two specimens from Bali, are given in Table 13.

Although *O. ruficeps* is a much wider ranging species than *O. sepium*, in Java it is restricted to the northern coastal belt where it replaces *O. sepium*. It remains unclear what exactly is the interaction between the two species.

Surprisingly little is known of *O. ruficeps* on Java. Only through Stresemann's (1953) clever research has it become clear that Soerabaja, Java, is the type locality. Around 1900 the only material in Leiden, supposedly from Java, consisted of two old specimens, formerly mounted, labelled "Java. S. Müller". They were reviewed by Finsch (1901). Incidentally, Finsch believed that the adult male and female were identical in plumage, and described the adult female as juvenile. Junge marked the provenance "Java" on the labels with a large query. This will be further discussed below.

Weakly differentiated but also valid are two subspecies described from islands in the Java Sea, *O. r. palliolatus* and *O. r. baweanus*. These are slightly larger than nominate *O. r. ruficeps* (Table 13).

This is the moment to mention that the large series from Java (ex Bartels coll.) available has enabled me to make comparisons between birds from Java (nominate *ruficeps*) and other islands. I can confirm that birds from Java have the heads

## SPECIES ACCOUNTS

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Table 13

Locality	Sex	No.	Wing	<i>Orthotomus sepium/ruficeps</i>	Tarsus	Entire Culmen	Exposed Culmen
<i>O. sepium</i>							
<b>Bali</b>	Male	1	49	42	19.6	16	12.8
	Male	1	49.5	42	19.4	16.6	13.4
<b>Lombok</b>							
<i>O. r. ruficeps</i>	Female	1	47.5	38	21	17.2	15
	Male	15	47-51 (48.4)	37-46 (41.3)	19-21 (20.2)	14.2-17 (15.8)	12.6-14 (13.2)
<i>O. r. palliolatus</i>							
<b>Karimon Djawa</b>	Female	5	44-45 (44.6)	32.5-35 (34.2)	18.5-19 (18.8)	15-15.8 (15.4)	12.9-13 (13.0)
	Male <sup>1</sup>	1	52	44	19.9	17	14.3
<i>O. r. baweanus</i>	Male	1	51	45	21	18	16
	Female <sup>2</sup>	1	48	37.5	20	ca. 16.5	ca. 12.5
<b>Bawean</b>							
	Male <sup>3</sup>	1	52	49	20.6	15.3	13.1
	Female	1	51	40.5			
	Female juv.	1	49	37			

<sup>1</sup>Holotype of *O. r. palliolatus* (RMNH no. 14065).<sup>2</sup>Bill tip damaged.<sup>3</sup>Paratype of *O. r. baweanus*.

clearly lighter chestnut than birds from Sumatra and, especially, Borneo. Differences between birds from Sumatra and Borneo are very subtle, but the heads of Borneo birds are a trifle darker than those of Sumatra birds, just enough for subspecific recognition. Therefore, we have on the three main islands *O. r. ruficeps* (Java), *O. r. cineraceus* (Sumatra), and *O. r. borneoensis* (Borneo). From Bangka only a single female is available, but specimens from Billiton have lighter sides to the head than most birds from Borneo, and seem better placed with *cineraceus*. This was also the opinion of Chasen (1937a: 229) who, discussing a single immature female from Billiton, noted it as being, "Exactly like birds in a similar state of plumage from Sumatra. . . . a Borneo race (*borneonensis*) seems just separable." All this is in complete accordance with the classification presented by Watson, et al. (1986a: 183). Birds from Bangka, listed as *O. r. ruficeps* by Mees (1986: 133), should be referred to *O. r. cineraceus*.

Now back to Müller's two specimens from "Java". They have dark chestnut heads and fit well into a series from Borneo. This justifies Junge's query. Because S. Müller collected in Borneo as well as in Java, a mixup of localities could easily have occurred at a time when there was insufficient awareness of the importance of careful labelling.

This means that, after J. J. H. de Labillardière collected the type of *O. ruficeps* during his stay in Java (1794), the species was not recorded again in Java until 1896, when Bartels found it common near Soerabaja, the type locality. *O. ruficeps* from Java has remained scarce in collections. For example, Kuroda (1933) had no material and had the species illustrated from two specimens from North Borneo. Hoogerwerf (1948b) had only six specimens from the Bartels collection. Later (1962c) he stated that the RMNH contained "probably the only series of importance in the whole world of *ruficeps* from Java." It is strange that this should be so, in a form that, at least until recently, was described as "talrijk" (plentiful) in the coastal region near Batavia (Hoogerwerf and Sicama, 1938: 188).

The 23 specimens in Leiden (15 males, 5 females, 2 males juv., 1 female juv.) are from Kali Tjiseloeng, Kali Boengin, and Moeara Boengin, Moeara Bloeboek, Moeara Gembong, Moeara Wetan (all in the Tjitaroem Delta), and one from Soerabaja.

The most recent description of the range in Java is by Watson, et al. (1986a: 183), "Locally in coastal mangroves of western (Labuan), northern (Jakarta), and eastern Java." The locality Labuan, on the west coast, is a new one. On the assumption that the record was based on a specimen in the USNM, where Watson worked, I wrote to Washington and was informed by Dr. Olson (in litt.. 9 I 1992) that there are no specimens of *O. ruficeps* from Java in the collection. An attempt to contact Dr. Watson at his private address failed. That leaves the possibility that the record originates with Hoogerwerf (1948a: 133), where *O. ruficeps* is tabulated as occurring in: Nature Park Udjung Kulon, 0-150 m, Labuan-Udjung Kulon, 0-300 m, and Nature Reserve Pulau Duwa, sealevel. There is no discussion

and not even any mention of the species in the main text. If these records are correct it is surprising that nowhere in his revisions of the species Hoogerwerf (1948b, 1962c) mentions any of these three localities. Moreover, in his later comprehensive works on Udjung Kulon (Hoogerwerf, 1969/1971, 1970), *O. ruficeps* is not included, either as a species or as a subspecies. As regards Pulau Duwa, in a recent bird list, in the compilation of which all Hoogerwerf's relevant publications and reports have been used, besides material from other sources, there is no record of the occurrence of *O. ruficeps* (cf., Milton and Marhadi, 1985). As regards the coastal region between Udjung Kulon and Labuan, Hoogerwerf (1948a) describes it as very rich in bird life, with primary and secondary forest, dry rice fields (hoema's) in the hills, and irrigated paddy fields, but he makes no mention of mangroves in the area. I consider it unlikely that Watson's record of Labuan is based on Hoogerwerf (1948a), as in that case he would certainly have listed Udjung Kulon rather than Labuan as place of westernmost occurrence in Java. Until its source has been verified, I cannot accept the Labuan record.

In southern Java there are surviving mangrove forests around the Segara Anakan/Kinderzee near Tjilatjap where an *Orthotomus* occurs. This could well be *O. ruficeps*, but the species has not yet been identified (van Balen, 1989).

## HILL BLUE FLYCATCHER

### *Cyornis banyumas*

*Muscicapa Banyumas* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 146—Banyumas.

*Muscicapa cantatrix* Temminck, 1823, Recueil d'Ois., **3** (livr. 38), pl. 226 and text—les bois de l'île de Java; restricted to West Java by Robinson and Kloss (1924: 279), and further restricted to Bantam by Chasen and Kloss (1929: 27).

*Cyornis banyumas limitans* Robinson and Kloss, 1927, Bull. Brit. Ornith. Club, **48**: 44—Tamansari, East Java, 1,400 feet.

*Muscicapa banyumas liga* Deignan, 1947, Proc. Biol. Soc. Wash., **60**: 167—nomen novum for *Muscicapa cantatrix* Temminck, nec *Muscicapa cantatrix* Wilson, 1810.

*Niltava banyumas mardii* Hoogerwerf, 1962, Ardea, **50**: 190—Tjiharashas, Prinsen Island, West Java.

## Material Examined

**West Java (liga):** summit of Mt. Karang (female), Moendoe, Karang (2 males), Pasir Eurih, Karang (2 males); Pasir Salam, Karang.

(1 male juv.); Halimoen (1 male); Salak (1 male); Gadok, Salak (1 male, 1 female); Buitenzorg (7 males, 4 females); Tjibadak (2 males, 1 female); Pangerango (16 males, 18 females, 10 males juv., 6 females juv.); Tjiboengoer (1 male, 1 female); Bandoeng, 800 m (1 male); Tjimanjau east of Bandoeng, 850 m (1 ?); Tjiomas (1 male); Tjinjiroewan (1 female juv.), Tirtasari (3 males, 1 female, 1 male juv.), Tjipanas near Garoet (1 male), Koeningen (1 male).

**Southeastern West Java and Middle Java** (*banyumas*): Bandjar (1 male); Gedangan, Semarang (1 ? juv.).

**East Java** (*banyumas*): Klatakan (1 male, 1 female); Dampar (1 male, 1 female); Idjen (1 female).

The flycatchers of the *Cyornis*-type are systematically notoriously difficult, and different revisors have often arrived at conspicuously different classifications, both at the specific and the generic levels.

Following its sinking in the synonymy of *Muscicapa* or *Niltava*, the genus *Cyornis* has been restored to validity in recent years. The generic classification of the flycatchers is in as great a mess as ever and the arguments for the resurrection of *Cyornis* have been as poor as those previously evoked for its suppression, but in the framework of the present article there is no need for me to take a stand. See also the remarks on *Malacocincla* on a previous page.

The latest opinion on the geographical variation of *Cyornis* (or *Niltava*) *banyumas* in Java (Watson, et al., 1986b: 366-367) is that the Javanese mainland is inhabited by two subspecies, *Niltava b. liga* (= *cantatrix*) in western Java and *N. b. banyumas* in central and eastern Java.

Differences claimed for the two subspecies are that males of the western one have the upperparts, especially the forehead and lores, a little brighter and darker blue, and the underparts, notably the lower abdomen, a deeper buff. Females would also have the abdomen darker buff than females of the nominate form.

My material, not extensive but more than that available to previous authors except Hoogerwerf (1962a), disproves any difference between the females of the two subspecies. As regards the males, there is indeed a tendency for western birds to have the lower underparts darker buff, and perhaps also to have a little more bright blue on the forehead. All these differences are so variable, that it is difficult to come to grips with them. Because of individual variation, *cantatrix* or *liga* is an unsatisfactory subspecies but, mainly in order not to seem too radical, I would be prepared to recognise it tentatively. The geographical delimitation of such vaguely-differentiated subspecies is difficult, but on the basis of its pale abdomen, a male from Bandjar seems referable to the nominate race which, therefore, extends into eastern West Java (Fig. 22). This is not surprising as the type locality is only just over the provincial border. On the other hand, a male from Koeningen is conspicuously dark on the underparts, and is obviously *C. b. liga*.

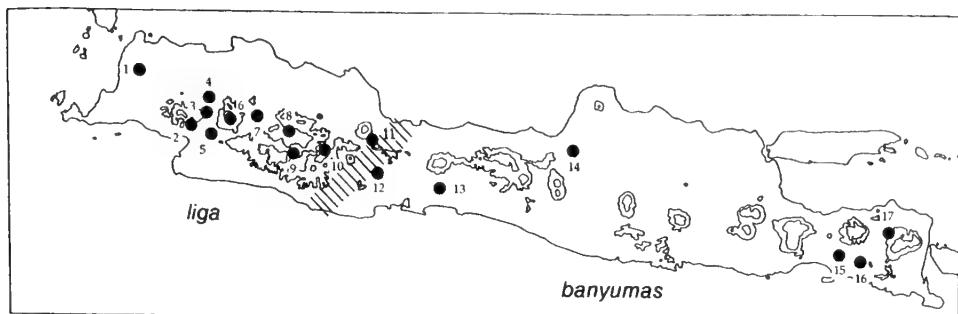


Fig. 22. Range of *Cyornis banyumas*. *C. b. liga*: 1. Karang; 2. Halimoen; 3. Salak; 4. Buitenzorg/Bogor; 5. Tjibadak; 6. Pangerango-Gedeh; 7. Tjiboengoer; 8. Bandoeng; 9. Malabar; 10. Tjipanas; 11. Koeningen. *C. b. banyumas*: 12. Bandjar; 13. Banyumas (approximate type locality); 14. Gedangan; 15. Klatakan; 16. Dampar; 17. Soember Wringin.

Note that from the whole of Middle Java only a single specimen has been available, and that is an unsexed juvenile.

Finally, a few words about the subspecies *mardii* from Prinsen Eiland, off the western coast of Java, are appropriate. I have examined three paratypes (2 males, 1 female, RMNH nos. 27882, 27884, 27883), and they have the conspicuously white abdomen which was the main subspecific character given by Hoogerwerf (1962a), who remarked that in this respect *mardii* was closer to nominate *banyumas* than to *cantatrix* (= *liga*) of the adjacent mainland, only 12 kilometers away. Presumably on the basis of this remark, Watson, et al. (1986b: 367) have placed *mardii* in the synonymy of nominate *banyumas*. As the range for nominate *banyumas*, they list, however, only: "Central and eastern Java," thus ignoring the awkward addition of Prinsen Eiland.

To me, the white lower abdomen in both sexes of *mardii* seems just enough for its retention.

Note that the male and female type specimens of *Muscicapa cantatrix* (and the nomen novum *Muscicapa banyumas liga*), merely labelled "Java," are still preserved in the RMNH. The male has buffy undertail coverts, the female has them practically white, as illustrated by Temminck.

## BLUE NUTHATCH

### *Sitta azurea*

*Sitta azurea* Lesson, 1830, *Traité d'Ornith.*, p. 316—no locality = Ardjuno Volcano, East Java, designated by Robinson and Kloss (1919).

*Poliositta azurea nigriventer* Robinson and Kloss, 1919, Bull. Brit. Ornith. Club, 40: 17—Tjibodas, Gedeh, W. Java, 4,000-6,000 ft.

## Material Examined

**West Java (*nigriventer*):** Halimoen (2 males), Salak (1 ?), Pangerango (28 males, 31 females), Gedeh (1 female, 2 ?), Tjibodas, Gedeh, 1,400 m (1 male, 1 female), Tangkoeban Prahoe (4 males, 3 females), Tirtasari, 1,600 m (2 males, 1 female), Tjisaroeni, 1,700 m (1 male).

**Middle Java (*azurea*):** Kaligoea, Slamat (2 males, 4 females).

**East Java (*azurea*):** Lawoe (1 male, ZMA no. 4963), Idjen Highlands (2 males, 1 female).

The geographical bias in favor of West Java is very pronounced in the RMNH material of this species. There are 78 specimens from West Java but only four from East Java. Even this is enough, however, to show that the differences between the two subspecies are slight.

When describing their new subspecies *nigriventer*, Robinson and Kloss were confronted with the problem that *Sitta azurea* had originally been described from a specimen of unknown provenance ("Patrie?"). Hartert (1914) designated Java as its type locality. Now a further restriction was necessary. The argument by Robinson and Kloss for restricting the type locality to East Java sounds rather strange, "In view of the fact that most of the recent material of this species in the Tring Museum appears to be from East Java, we have restricted the locality of the typical form (*P. azurea azurea*) to East Java (neotypes from Ardjuno Volcano)." The restriction itself is acceptable, and even the designation of neotypes, although one would have liked to have seen some evidence (omitted completely) that the authors before proposing their neotypes had tried to trace Lesson's specimen and made certain that it no longer existed. Their failure to do so makes the validity of these neotypes questionable (ICZN, 1985: Art. 75 (d)).

The western form was diagnosed as differing from the typical form (restricted as above) in the following characters, "in having the white portion of the under surface very strongly washed with buff; the abdomen and thighs black scarcely tinged with indigo-blue." There is no mention of the number of specimens of each form that were examined.

An examination of these two characters led me to the conclusion that the difference in tone of the buff on the underparts is so insubstantial as to be of no significance, not even as an auxillary character. What remains is that western birds have the lower abdomen black, with at most only a slight violet gloss, whereas eastern birds have it less black, with a more distinct violet gloss. Even this difference is very slight and *nigriventer* is a poorly differentiated subspecies which, however, by current standards, seems just tenable. With some hesitation I would

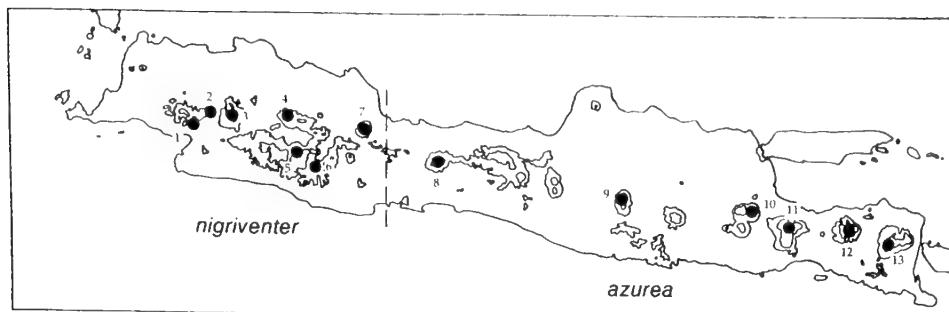


Fig. 23. Range of *Sitta azurea*. *S. a. nigriventer*: 1. Halimoen; 2. Salak; 3. Pangerango-Gedeh; 4. Tangkoeben Prahoe; 5. Malabar; 6. Tjisaroeni, Papandajan; 7. Tjerimai. *S. a. azurea*: 8. Slamat; 9. Lawoe; 10. Ardjoeno; 11. Tengger Highlands; 12. Ijang Highlands; 13. Idjen Highlands.

refer specimens from Mt. Slamat to the nominate race, which means that *nigriventer* is confined to the mountains of West Java (Fig. 23). Besides the localities from where I have examined material, *nigriventer* occurs on Mt. Tjerimai (cf., Stresemann, 1930c) and nominate *azurea* is known from Mt. Ardjoeno (Hartert, 1896: 540; Kuroda, 1930: 75), the Tengger Highlands (van Bemmell-Lieneman and van Bemmell, 1940), and the Ijang Highlands (Kooiman, 1941). Greenway (1967: 144) gives the range of *nigriventer* as Western Java and of nominate *azurea* as Eastern Java, which is not exactly wrong, but very vague.

Lawoe birds were regarded by Voous (1948: 98-99) as intermediate, for "the white of the underparts in these specimens is distinctly tinged with buff (as in *nigriventer*), but the black of the abdomen has a slight, though distinct dark blue wash (as in *azurea*)."  
Voous had no material for comparison and based this conclusion on literature descriptions only. As the character of the buff coloration, which was supposed to link these birds with the western subspecies, is not valid, the remaining character places them with nominate *azurea*.

## BLOOD-BREASTED FLOWERPECKER

### *Dicaeum sanguinolentum*

*Dicaeum sanguinolentum* Temminck, 1829, Recueil d'Ois., 4 (livr. 80), pl. 478, fig. 2—Java. The statement by Robinson and Kloss (1923: 57) that it was "of West Java" has been regarded as a formal restriction by later authors.

*Dicaeum sanguinolentum ablutum* Robinson and Kloss, 1923, J. Fed. Malay. St. Mus., 11: 57—Tamansari near Banjoewangi, E. Java, 1,600 ft.

The type locality of *D. sanguinolentum* is Java. It has correctly been restricted to West Java, for the type material was collected by Kuhl and Van Hasselt whose activities were confined to West Java. The validity of *D. s. ablutum*, described from Banjoewangi, East Java has been discussed by several authors, most recently Salomonsen (1961: 10), who rejected it. There is no need to revive the discussion but the species is listed here because geographical variation has been suggested and because some authors, such as Hellebrekers and Hoogerwerf (1967: 140), have continued to recognize *ablutum*, presumably because, on the basis of a meagre material, Hoogerwerf (1947b) regarded it as valid.

## RUBY-CHEEKED SUNBIRD

### *Anthreptes singalensis*

*Nectarinia phoenicotis* Temminck, 1822, Recueil d'Ois., 4 (livr. 18), pl. 108, fig. 1—à Java et à Sumatra.

*Anthreptes singalensis bantenensis* Hoogerwerf, 1967, Bull. Brit. Ornith. Club, 87: 7—Udjung Kulon (West Java), Tjibunar.

No material of the subspecies *bantenensis* has been available to me, so that for an evaluation of its characters I have had to rely entirely on Hoogerwerf's (1967a) description. From this it is apparent that *bantenensis* is a well-marked subspecies in which the male sex differs strikingly from both the adjacent subspecies, *sumatrana* and *phoenicotis*, by having the brown of the under surface confined to the chin and throat, merging on the upper breast into the yellow of the breast and lower underparts; in *sumatrana* and *phoenicotis* the brown, albeit with decreasing intensity, spreads downward over the whole breast. This limited brown is also found in females of *phoenicotis* but they have the brown and yellow well-demarcated on the border of throat and breast (no adult females of *bantenensis* were available to Hoogerwerf).

Interestingly and unexpectedly, therefore, *bantenensis* is not intermediate in characters between *sumatrana* and *phoenicotis*. There is very little difference between the males of these two subspecies, *phoenicotis* merely has the yellow of the under surface a little brighter, clearer yellow than *sumatrana*, which has the lower underparts a trifle duller, more greenish-yellow.

The range of this subspecies remains to be defined. Hoogerwerf mentions that it "may extend eastwards from Udjung Kulon," and then reports that some of his material is from a locality about 15 miles away from Udjung Kulon. That would be Tjibunar, a place of which I have failed to trace its exact position.

## ORIENTAL WHITE-EYE

### *Zosterops palpebrosa*

*Zosterops melanura* Hartlaub, 1865, J. f. Ornith., **13**: 15—Pontianak auf Borneo (errore!) = Java; restricted to Bandoeng, West Java by Mees (1955: 141, footnote 6).

*Zosterops buxtoni* Nicholson, 1879, Ibis (4)**3**: 167—Java; lectotype from Tapos, Pangerango (Mees, 1955: 141, footnote 6).

The two well-differentiated subspecies, *melanura* with entirely yellow underparts and *buxtoni* with light grey flanks, meet and intergrade in a comparatively restricted area in western West Java, viz., a zone with a width of perhaps no more than 50 km. This is a typical example of secondary intergradation.

For a map, and speculation about the origin of this zone, see Mees (1951). On that map the locality Tapos has been misplaced, but that does not affect the distribution of the two subspecies as given there. The error was due to several localities having the same name in the same general area. A correction was published in a subsequent paper (Mees, 1957: 79-80).

## MOUNTAIN WHITE-EYE

### *Zosterops montana*

*Z[osterops] montana* Bonaparte, 1850, Conspl. Gen. Av., **I**: 398—Sumatra = Mt. Merapi, Padang Highlands (cf., Mees, 1957: 176, 184).

*Zosterops neglecta* Seeböhm, 1893 (26 Jan.), Bull. Brit. Ornith. Club, **1**: xxvi—East Java = near Tosari at 5,000' (cf., Seeböhm, 1893).

*Zosterops palpebrosa sindorensis* Siebers, 1929, Treubia, **11**: 151—G. Tjerimai, 3,072 m, West-Java.

*Zosterops montana minor* Hoogerwerf and de Boer, 1947, Zool. Meded., **28**: 252—Tegal Aloen-aloen, Gn. Papandajan, W. Java, 2,500 m.

*Zosterops montana minima* Hoogerwerf, 1949, Zool. Meded., **30**: 107, 108—nomen novum for *Zosterops montana minor* Hoogerwerf and de Boer, nec *Zosterops albiventer minor* Meyer, 1874.

In a revision of this species I concluded that none of the populations inhabiting Java is sufficiently differentiated from nominate *Z. m. montana* of Sumatra for nomenclatural recognition. At the same time, I noted some variation in measurements, the population of Mt. Soembing-Sindoro being the largest (av. wing length 58.35 mm), that from Mt. Papandajan the smallest (av. wing length 55.68 mm).

Moreover, the population from Mt. Soembing-Sindoro seemed a trifle yellower, less greenish, on the upperparts and forehead (cf., Mees, 1957).

Evidently, some differentiation between the various mountain populations has taken place and is worth recording here. It is also worth drawing attention to the absence of the species from some mountains where one would expect it to occur. In Central Java its apparent absence from several mountains might be due to insufficient exploration, but it could not possibly have been overlooked on Mt. Pangerango-Gedeh and other mountains in West Java. This, like the minor differentiation noted above, suggests that the species does not easily cross lowland barriers. The lowest mountain from which this species is definitely known in Java, is Mt. Papandajan (2,660 m).

## JAVAN GREY-THROATED WHITE-EYE

### *Lophozosterops javanica*

*Sylvia javanica* Horsfield, 1821, Trans. Linn. Soc. Lond., **13**: 156—

Java = Central Java, probably from Mt. Prahu or Mt. Merbaboo.

*Z[osterops] frontalis* Reichenbach, 1852, Handb. spec. Ornith., Meropinae, p. 94, pl. 463, fig. 3307—Port Essington (errore!) = West Java, G. Gedeh (designated by Bartels, Jr. and Stresemann, 1929: 143).

*Zosterops fallax* Sharpe, 1884, Cat. Birds Brit. Mus., **9**: 197—Java, West Java, Sumatra = West Java.

*Oreosterops javanica elongata* Stresemann, 1913, Novit. Zool., **20**: 366—Gunung Bratan (Bali), 4,000 ft.

The geographical variation of this mountain bird, which is endemic to Java and Bali, has been discussed by Mees (1969: 172-183). Of particular interest is that, of the three subspecies, those inhabiting respectively the extreme West (*frontalis*) and the extreme East (*elongata*) are almost identical, whereas the widely-distributed nominate race, occupying the greater part of Java, is clearly different.

The situation in eastern Java requires some additional discussion. In 1969 I stated that “all specimens examined from the Tengger Mountains are typical *javanica*, and Idjen specimens are generally *elongata*, but one Idjen bird (male juv.. 5 V 1938, leg. J. G. Kooiman, RMNH no. 23121) is indistinguishable from the nominate race.” The remark about the Idjen bird is correct, it certainly is *javanica*. However, of Kooiman’s three specimens from Ngadiwono, Tengger, one is aberrant, *javanica*-like (as described in 1969), the two others are *elongata*. A specimen from Nongkodjadjar, 1,200 m (male, 20 I 1911, leg. E. Jacobson, RMNH no. 2204), on the other hand, is *javanica*. It is the bird correctly described, under the name *Zosterops javanica*, by Van Oort (1911: 48). Ngadiwono

and Nongkodjadjar, together with a third mountain resort, Tosari, are less than 10 km apart, on the northwestern slope of the Tengger Massif. There is more than "a slight influence" (as cautiously remarked by Mees, 1969: 182) of *elongata* there and further investigation of the relative status and abundance of the two subspecies in the Tengger Massif is desirable. In this connection it may also be noted how peculiar is the complete absence of material of this common species from the Ijang Highlands. In a list of the birds of the Ijang Highlands (Kooiman, 1941) it is not mentioned, but perhaps the observations were made at a level (2,000 m) somewhat above the limit of common occurrence.

A note about the type locality and types of the nominate race and of the synonym *Z. fallax*, although not directly relevant, may not be too far out of place here. In my former publication I confused Horsfield's Mt. Prahu (Central Java) with Mt. Tangkoeban Prahoe in West Java (cf., Mees, 1969: 179). This has been corrected only recently (Mees, 1989: 370-371). It may be assumed that the type material of *L. j. javanica* originated from either (or both) Mt. Prahu and Mt. Merbaboo, both in Central Java. *Z. fallax* was based on specimens in the British Museum (as well as some literature references). Two specimens were labelled Java, three labelled West Java, and one labelled Sumatra (in error, for the species is not known to occur in Sumatra). There is no mention of *Z. fallax* in Warren and Harrison (1971).

## MOUNTAIN SERIN

### *Serinus estherae*

*Crithagra Estherae* Finsch, 1902, Notes Leyden Mus., **23**: 151—Berg Pangerango (in 6,000 Fuss Höhe).

*Serinus estherae orientalis* Chasen, 1940, Treubia, **17**: 263—Gng. Ajekajek, Tengger mountains, East Java, about 2,300 m.

## Material Examined

**West Java (estherae):** Pangerango (44 males, 20 females, including the male and female syntypes), Tjibodas, Gedeh (1 female), Tjisaroeni, Papandajan (1 male).

**East Java (orientalis):** Nd. helling Gng. Ajekajek, Tengger Geb., 2,300 m (male, type of *S. e.orientalis*).

The type and only available specimen of *orientalis* has a rather small bill. As Chasen (1940) makes clear that the whole series from East Java was small-billed, this appears to be a valid subspecific character. The specimen also has rather extensive white feathering around and particularly below the eyes, but as Chasen

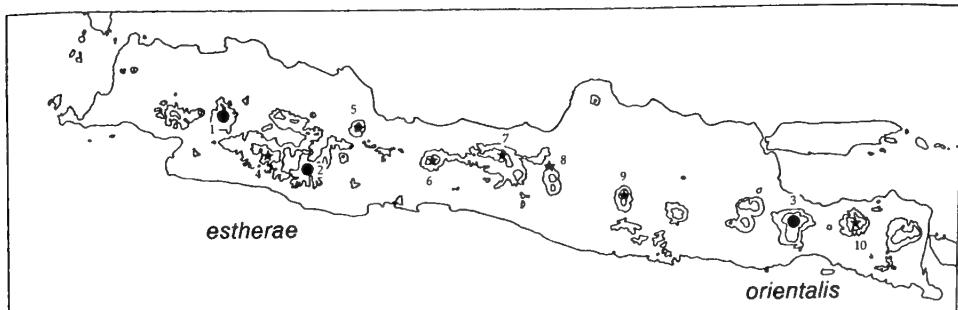


Fig. 24. Range of *Serinus estherae*. *S. e. estherae*: 1. Pangerango-Gedeh; 2. Tjisaroeni, Papandajan. *S. e. orientalis*: 3. Tengger Massif. These three are the only localities from where collected material exists. The stars [\*] indicate field records of diverse reliability, and unknown subspecies: 4. Patoeha; 5. Tjerimai; 6. Slamat; 7. Prahoe; 8. Telomojo; 9. Lawoe; 10. Ijang Highlands.

did not mention this in the description of *orientalis*, it may be assumed to be an individual character, not shared by the other specimens of the sample on which *orientalis* was based.

This elusive species was described only in 1902. The fact that since then it has been collected in but four localities in Java does not necessarily mean that it is absent from the other mountains (Fig. 24). Indeed, Bartels, Jr., quoted by Kooiman (1941), claimed observations on Mts. Patoeha, Tjeremai, Slamat, and Lawoe. Kooiman himself observed it in the Ijang highlands. Chasen (1940) mentions a sight record from Mt. Telomojo, south of Semarang, by Lief tinck. It is interesting in that this is a comparatively low mountain (1,893 m). Van Balen (in litt.) added Mt. Prahoe.

Bartels is known to have been annoyed when Finsch named this species after his (Finsch's) daughter, who had had nothing to do with its discovery, nor with ornithology. Fortunately, the incident did not sour the relations too much, and Finsch continued to receive and describe Bartels's discoveries, even after he had left Leiden.

## BLACK-WINGED STARLING

### *Sturnus melanopterus*

*Gracula melanoptera* Daudin, 1800, *Traité d'Ornith.*, **2**: 286—  
l'Inde = East Java, in the surroundings of Soerabaja (cf., Stresemann, 1953: 96, 106).

*Pastor tricolor* Horsfield, 1821, *Trans. Linn. Soc. Lond.*, **13**: 155—  
Java.

*Gracupica tertia* Hartert, 1896, *Novit. Zool.*, **3**: 547—Bali.

## Material Examined

**West Java (*melanopterus*):** Bolang Hilir (5 males, 8 females, 1 female juv.), Bolang (1 female), Buitenzorg (1 ?, 1 ? juv.), Tjaringin, Pangerango (1 female), Batavia (1 ?), Tandjong Priok (2 males), Rawa Boeaja, Batavia (1 male), Moeara Karang, Batavia (1 ?), Moeara Gembong (1 male, 1 female), Kali Boengin (3 males, 5 females), Moeara Boengin (1 male, 1 female), Kampong Gaga, Krawang (1 male, 2 females), Tjibaroesa (1 male), Sitoe Palahlar, Tjibaroesa (1 male), Tjikao, Poerwakarta (1 male, 1 female), Poerwakarta (1?), Tjihea (3 males, 1 female, 2 males juv.), Theeonderneming "Djati Nangor", 900 m, Preanger (1 male), Tjokondang near Soebang (1 male).

**East Java (morphologically pure *melanopterus*):** Minggiran, Kediri (1 male), Kawarassan, Kediri (1 female), Drio, Soerabaja (1 ? juv.), Soerabaja (1 male), Rawah Boender, Soerabaja (1 female), Paseroean (2 ?, 1 ? juv.).

**East Java (*tricolor*):** Tosari, Tengger (1 ?), Soekowono, Besoeki (1 male), Klatakan (1 female), Soember Wringin, Idjen (9 males, 4 females).

**Bali (*tertius*):** Koeta (1 male, 1 female), Bratan (2 males), Oeboed (1 female juv.).

Intermediates between *melanopterus* and *tricolor*: Soember Wringin (2 males).

This species is almost endemic to Java, its range encompassing Java, Madura, and Bali, so that it is convenient to treat its geographical variation over its whole range. There is some doubt about its occurrence as a wild bird on Lombok (cf., Rensch, 1931: 593). The three subspecies are well-differentiated. There is no sexual difference in plumage.

**S. m. *melanopterus*:** adults with the largest feather of the alula, the remiges, and the rectrices black, the remiges with white bases, the central pair of rectrices with narrow white tips, the lateral rectrices with large white tips. The remainder of the plumage entirely white. Juveniles differ in that they have the pileum and upper back buffish grey, the upper wing coverts blackish with buffish grey margins; the remiges are brownish black (not pure black as in the adults) and especially the inner ones have narrow pale margins; the remainder of the plumage is as in the adults. I assume that two specimens from Bolang Hilir resembling adults, but with a few grey feathers on the back, are subadult in the last stage of change from the immature into the adult plumage.

**S. m. *tricolor*:** adults similar to *melanopterus*, but the lower back is grey; upper wing coverts white with broad black edges. The upper back, rump, and

upper tail coverts are white, as in *melanopterus*. Juveniles of this subspecies have not been available, but they may be presumed to resemble juveniles of the nominate race.

**S. m. tertius:** adults resembling those of the preceding two subspecies, but the upper and lower back are grey, rather darker than in *tricolor*; the rump and upper tail coverts are a paler grey (not white); upper wing coverts black. A juvenile resembles the adults, but has the pileum and nape suffused with grey; the mantle is a little lighter and more brownish grey.

Some specimens from the range of *tricolor* have a considerable admixture of white in the grey saddle on the back (RMNH nos. 47034, 47036, from Soember Wringin). Considering that morphologically pure *melanopterus* ranges as far east as Pasoeroean, it is not surprising that its influence is still visible in a minority of birds from Soember Wringin.

It might be argued that *tricolor* has originated as a result of hybridization between nominate *melanopterus* and *tertius*, as suggested by its intermediate appearance. This may or may not be true, but *tricolor* is well-differentiated from both other subspecies and in my opinion certainly merits recognition.

In the literature only Bartels, Jr. and Stresemann (1929: 138) give the ranges of the two subspecies inhabiting Java correctly; under *tricolor*: "Oestlichstes O. Java; der übrige Teil der Insel wird von *melanoptera* bewohnt." Of later authors, Delacour (1947: 327) entirely ignored *tricolor*, extending the range of *melanopterus* over the whole of Java; perhaps he was influenced by Kuroda's (1930, Eng. Col. 66-67) notion that *tricolor* merely represented a phase or juvenile plumage of *melanopterus*. Considering that the juvenile plumage of *melanopterus* shows resemblance to adult *tricolor*, it is easy to understand how such an idea could originate if one had inadequate material. Chasen (1935: 295), Amadon (1962: 111-112), and MacKinnon (1990: 319) reverted to the inaccurate definition of the ranges of western Java for *melanopterus* and eastern Java for *tricolor*. Bartels (1921) recorded his specimens of *S. m. tricolor* from far eastern Java erroneously as *Gracupica tertia* [sic]. This may be the basis of Rensch's (1931: 593) claim that *tertius* would inhabit the extreme east of Java, which is, as far as I can judge, without other foundation and has not been repeated by later authors.

In the available material there is a hiatus of over 500 km between the localities of nominate *melanopterus* in West Java and those in East Java (Fig. 25). There is, of course, no reason to assume that it is absent from the intervening region. Indeed, Kuroda (1933: 41) recorded it from Djapara, with a reference to Vorderman, 1889, but there must be a mixup, for Vorderman's 1889 paper is on birds from the Karimon Djawa Islands, and there is no mention in it of *Sturnus melanopterus*. Nor have I found mention of its occurrence at Djapara in any other paper by that author.

The occurrence of the nominate race on Madura was recorded over a century ago (Sharpe, 1890: 79; 1909: 519), on the basis of a specimen in the British Mu-

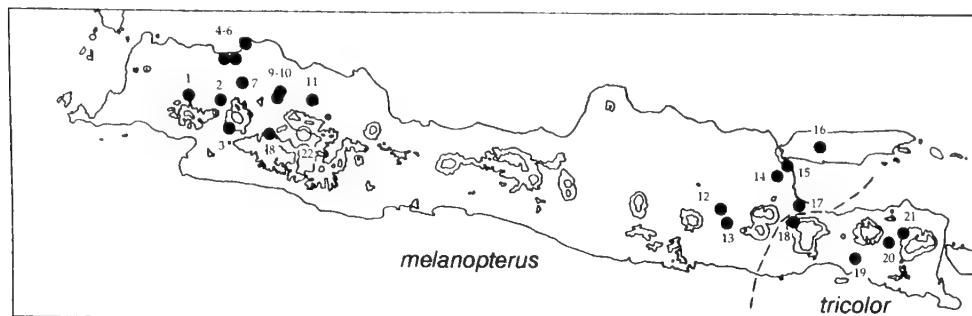


Fig. 25. Range of *Sturnus melanopterus*. *S. m. melanopterus*: 1. Bolang; 2. Buitenzorg; 3. Tjaringin; 4. Batavia; 5. Tandjong Priok; 6. Tjitaroem delta; 7. Tjibaroesa; 8. Tjihea; 9. Tjikao; 10. Poerwakarta; 11. Tjikondang near Soebang; 12. Minggiran; 13. Kawarassan; 14. Drio, 15. Soerabaja; 16. Madura (this dot has been placed arbitrarily, as an exact locality is not known); 17. Pasoeroean. *S. m. tricolor*: 18. Tosari; 19. Klatakan; 20. Soekowono; 21. Soember Wringin. *S. m. tricolor* (feral population in West Java, indicated by a ring, not a dot): 22. Maribaya near Lembang.

seum collected by A. B. Meyer in November 1871. But notwithstanding these impeccable antecedents, it seems to have been overlooked by later authors, with the sole exception of Kuroda (1933: 41).

Finally, one specimen deserves special mention. It is a bird (female, 8 I 1956, leg. M. van Balgooy, RMNH no. 82019) collected at Maribaya near Lembang, West Java. This adult specimen is clearly *tricolor*, not *melanopterus* as it should be. It is the only misfit in a series of over 40 specimens of West Java. The question arose, whether it might be an escaped cagebird; I could not think of any other explanation. Information received from the collector, Dr. van Balgooy, is that the bird belonged to a small, isolated, colony which increased in the period he had it under observation. His impression had been, all the time, that it could have originated from escaped or released cage birds. Native birds, including *S. melanopterus*, were released from the Bandung zoological gardens in 1942, on the eve of the Japanese invasion (de Wiljes, 1957), and that might have been the origin of the Maribaya colony (van Balgooy, 1957). In this connection it is perhaps well to point out that, although in West Java *Sturnus melanopterus* is not rare, especially in the northern lowlands, farther inland it tends to be patchily distributed, so that local colonies would have little contact. Therefore, an introduced population may have continued to flourish, and it is desirable that its doubtful origin be known.

I have not followed the very recent suggestion by Feare and Kang (1992) that *S. melanopterus* should be transferred to the genus *Acridotheres*. Although I agree that the genus *Sturnus*, as defined by Amadon (1943; 1956: 5; 1962: 104-112), is a somewhat heterogeneous conglomerate of well-differentiated species, several of which were formerly placed in monotypic genera, and that it owes its origin to a large extent to the philosophy that the number of genera had to be

reduced. A redefinition of the genus is certainly desirable. I do not believe, however, that a two-day field study of some feral individuals in Singapore is sufficient basis for the proposed transfer. More seriously, there is no mention of *Sturnus contra* and other species currently placed in *Sturnus*, except for a casual remark that these species "should also be included in . . . a review." I could not agree more, especially in the light of Amadon's opinion that *Acridotheres* is scarcely separable from the expanded *Sturnus*, and Marien's (1950: 471) that the two should be united. Attention should also have been paid to the suggested relationship to *Leucopsar rothschildi*, already noted by Amadon (1943).

# 6

## ANALYSIS

In the preceding chapter 42 species (11 nonpasseres and 31 passerines) are discussed, which at one time or another have been considered to show geographical variation at the subspecific level in mainland Java.

A revision has left 23, which will be listed and further analysed below. First, however, the rejected cases require a short review. They can be divided as follows: no geographical variation at all, 12 species: *Treron vernans*, *Collocalia fuciphaga*, *Megalaima australis*, *Picus vittatus*, *Dendrocopos macei*, *Dinopium javanense*, *Pycnonotus goiavier*, *Trichastoma pyrrogenys*, *Malacocincla sepiaria*, *Cisticola juncidis*, *Prinia familiaris*, *Dicaeum sanguinolentum*.

Very slight differentiation, well below the threshold of expression in nomenclature, six species: *Megalaima armillaris*, *Pitta guajana*, *Pericrocotus flammeus*, *Criniger bres*, *Zoothera citrina*, *Zosterops montana*. *Lanius schach* deserves to be mentioned separately, as a special case, with its variably melanistic population in eastern Java.

Below is a list of the remaining 23 forms, with for each a very short indication of its vertical range (whether lowland or mountain form) and its preferred habitat.

### ***Arborophila javanica javanica, lawuana, and A. orientalis:***

Habitat: The floor of the mountain-forest, above ca. 1,000 m. Its occurrence as low as 300 m (Van Balen, 1992) must be exceptional, as otherwise the striking geographical variation would be inexplicable.

### ***Ducula lacernulata lacernulata and williami:***

Habitat: Mountain forest above 900 m.

### ***Phaenicophaeus curvirostris curvirostris and deningeri:***

Habitat: Forest edges, secondary woodland, and gardens in the lowlands and middle levels.

### ***Chrysocolaptes guttacristatus indomalayicus and C. strictus:***

Habitat: *C. guttacristatus* mainly mangroves, but also lowland forest; *C. strictus* forest at all levels, probably including mangrove.

### ***Anthus novaeseelandiae malayensis and idjenensis (?):***

Habitat: Open country at all levels.

### ***Lalage nigra striga and (nigra) sueurii:***

Habitat: Forest edges, secondary woodland, and gardens in the lowlands and middle levels.

***Pycnonotus bimaculatus bimaculatus and tenggerensis:***

Habitat: Mountain forest above ca. 1,000 m.

***Aegithina tipha djungkulanensis and scapularis:***

Habitat: Forest edges, secondary woodland, and gardens in the lowlands and middle levels.

***Copsychus saularis musicus and amoenus:***

Habitat: Forest edges, secondary woodland, and gardens in the lowlands and middle levels; also mangroves.

***Copsychus malabaricus tricolor and omissus:***

Habitat: Dark lowland forest, to perhaps 1,000 m.

***Turdus poliocephalus fumidus, javanicus, stresemanni, and whiteheadi:***

Habitat: Light woodland in the high mountains, generally above 2,000 m.

***Pomatorhinus montanus montanus and ottolanderi:***

Habitat: Mountain forest above 900 m.

***Stachyris thoracica thoracica and orientalis:***

Habitat: Forest of the middle levels, from ca. 500-1,500 m. Hoogerwerf (1948a: 131) lists this species from the lowland reserve of Udjung Kulon, but presumably in error, as in his later comprehensive works on Udjung Kulon he makes no mention of it (cf., Hoogerwerf, 1969-1971; 1970).

***Stachyris melanothorax melanothorax and intermedia:***

Habitat: Forest at all levels.

***Garrulax rufifrons rufifrons and slamatensis:***

Habitat: Mountain forest above 900 m.

***Orthotomus sepium sepium and O. ruficeps ruficeps:***

Habitat: *O. sepium* is one of the commonest birds in gardens, forest edges, etc., in all parts of Java, ranging from sealevel to at least 1,500 m. *O. ruficeps* is only known from mangroves and immediately adjacent vegetation along the north coast.

***Cyornis banyumas liga and banyumas:***

Habitat: Forest edges, woodland, and neglected gardens in the lower and middle levels. Not in mangroves, where it is replaced by the very similar *C. rufigastera*.

***Sitta azurea nigriventer and azurea:***

Habitat: Mountain forest above ca. 900 m.

***Anthreptes singalensis bantenensis and phoenicotis:***

Habitat: Lowland forest.

***Zosterops palpebrosa buxtoni and melanura:***

Habitat: Forest, forest edges, secondary woodland, and gardens, mainly from ca. 200-2,000 m (not in the flat lowlands).

***Lophozosterops javanica frontalis, javanica, and elongata:***

Habitat: Mountain forest above 900 m.

***Serinus estherae estherae and orientalis:***

Habitat: Light woodland in the high mountains.

***Sturnus melanopterus melanopterus and tricolor:***

Habitat: Open country with scattered trees in the lowlands and middle levels.

Geographical variation in Java is of the following kinds:

(1) Apparent secondary contact. Noted in lowland species with well-marked subspecies which meet and intergrade or hybridize over a narrow or, in one case, a very wide zone. Found in six species: *Aegithina tiphia*, *Copsychus saularis*, *Copsychus malabaricus*, *Anthreptes singalensis*, *Zosterops palpebrosa*, *Sturnus melanopterus*.

(2) Apparent primary variation, due to distance, in species with a presumably almost continuous range. Birds from extreme west and extreme east Java are slightly to moderately differentiated, but indications are that there is a smooth gradient from one end of the island to the other. Lack of material from the intervening regions makes this a surmise rather than a certainty. Displayed by three species: *Phaenicophaeus curvirostris*, *Stachyris melanothorax*, *Cyornis banyumas*.

(3) Mountain birds. As the mountains of Java consist of a chain of high mountains which is not continuous but interspaced by extensive lowlands, the distribution of mountain birds is insular in character. It depends on the mobility of the species whether this has led to strong geographical variation. In several cases of mountain birds, the variation seems to be of Type 2, indicating incomplete separation between the various populations. Presumed incomplete separation (occurrence of intermediate populations) is seen in four species: *Pycnonotus bimaculatus*, *Pomatorhinus montanus*, *Sitta azurea*, *Lophozosterops javanica*. Presumed almost complete separation has been found in four species: *Arborophila javanica*, *Ducula lacernulata*, *Turdus poliocephalus*, *Garrulax rufifrons*.

(4) Insufficiently known. *Anthus novaeseelandiae* (the existence of geographical variation requires confirmation), *Stachyris thoracica*, and *Serinus estherae*.

(5) Cases where there is evidence for eastern and western populations to be specifically different. *Arborophila javanica* vs. *Arborophila orientalis*, *Chrysocolaptes guttacristatus indomalayicus* vs. *Chrysocolaptes strictus*, *Lalage nigra striga* vs. *Lalage s. sueurii*, and *Orthotomus sepium* vs. *Orthotomus ruficeps*.

An interesting point emerging from this study is that for certain lowland species in Java, the narrow Strait Bali (only ca. two km wide) is a more efficient barrier to gene-flow, than a thousand kilometers separation by distance. In the past it has been readily assumed that birds from extreme eastern Java would agree with birds from Bali, rather than with birds from western Java. In a few

cases (*Megalaima armillaris*, *Dinopium javanense*) a subspecies that was thought to occur in East Java and Bali, is valid, but is confined to Bali.

Even after this subdivision in different categories, it is evident that there are few, if any, regularities in geographical variation that are shared by several species and which might justify a zoogeographical subdivision of Java. Rensch's question, which is quoted on the title page of this volume, is therefore answered in the negative.

Perhaps most interesting zoogeographically are the zones of secondary contact. Of the six species in this category, four have the subspecies border in West Java. Two subspecies (of *Aegithina tiphia* and *Anthreptes singalensis*) have their ranges confined to the Udjung Kulon peninsula. The case of the former is clearly one of the Sumatran subspecies having gained a foothold there, with resultant hybridization; the characters of the other one are insufficiently known. The two other species, *Copsychus malabaricus* and *Zosterops palpebrosa*, have in common a well-marked endemic subspecies ranging over most of Java and a mainly Sumatran subspecies occurring in northwestern Java, opposite the narrowest part of Strait Sunda, where Java approaches closest to Sumatra. It is an obvious guess to make that this is a matter of fairly recent colonization from Sumatra by a subspecies which has managed to take over a part of the range of the original Javanese subspecies. A similar explanation may be given at the species level for *Chrysocolaptes strictus*, which is an endemic species of Java (Bali and Kangean), and widely-distributed *C. guttacristatus* that has more recently invaded northwestern Java, coming from Sumatra, and was probably helped by a preference for mangroves. It is not too fanciful to add the species pair *Orthotomus sepium*/*O. ruficeps* to this category. Of these two closely related species, the former is practically endemic to Java, whereas *O. ruficeps*, otherwise widely distributed in the Sunda region, has colonized the mangroves along the north coast as well as smaller islands (Bawean, Kangean), without penetrating into the main range of *O. sepium*. The fact that on Java and on the smaller islands *O. ruficeps* has developed some slightly differentiated subspecies, points to this second colonization having taken place not too recently.

Such a simple historical explanation cannot be given for *Copsychus saularis*. The wide zone of intergradation, and the parallel found in Borneo, show that the situation is complex. It is tempting, and very likely correct, to see the distribution of the very similar black-bellied subspecies *C. s. amoenus* in eastern Java and Bali, and *C. s. pluto* in eastern Borneo, as a result of the last period of Pleistocene low sealevel when they would have had an unbroken range across the eastern part of the exposed Sunda Shelf. This cannot explain the wide distribution of *C. s. musicus* in both islands, unless at the same time (the period of low sealevel) there was an extension of the range of this white-bellied subspecies at the expense of its black-bellied relatives. But that is speculation and not even likely speculation.

There remain the cases of the lowland species *Sturnus melanopterus* and *Lalage nigra/L. sueurii* with borders in eastern Java. The explanation may be that the eastern form has colonized Java from Bali and, as observed in the above, *Sturnus melanopterus tricolor* may have originated through hybridization of nominate *melanopterus* with colonizing *S. m. tertius* from Bali.

The distribution of the mountain birds showing geographical variation is by definition insular in character. As some mountains are certainly more isolated than others, it is unexpected that here also there seems little agreement. Take, for example, the three most geographically variable species. *Arborophila javanica* ranges without significant variation eastward to Mt. Slamat, has a different subspecies on Mt. Lawoe, and has a related species in extreme eastern Java. In *Turdus poliocephalus* the western subspecies *fumidus* does not range so far eastward and both Mts. Tjerimai and Slamat have the subspecies *javanicus*, which ranges throughout central Java. It shares with *Arborophila* an endemic subspecies on Mt. Lawoe. In East Java another subspecies is widely distributed in the highlands. In *Garrulax rufifrons* there is no variation in the whole of West Java, but it has a well-marked endemic subspecies confined to Mt. Slamat; it does not occur farther east. Subspecies boundaries of *Lophozosterops javanica*, on the contrary, run across the western part of West Java and the Tengger Massif in East Java, whereas in the central part of Java, where volcanoes and other highlands are more widely spaced, providing, one would assume, more isolation, it shows no variation.

In a few instances a vertical stratification of subspecies has been claimed. *Dryobates analis montis* was described as a montane subspecies of *D. macei analis*, *Anthus novaeseelandiae idjenensis* was separated as a montane subspecies from *A. n. malayanus*, and Jany (1953a, 1953b) made suggestions about *Zoothera citrina* and *Stachyris melanothorax*. As has been pointed out three of these cases are definitely invalid, and the fourth, *A. n. idjenensis*, is at best questionable (especially as the original material on which the name was based, included a lowland specimen). The conclusion is justified that altitudinal subspecies do not occur in Java.



## GAZETTEER

The spelling of geographical names has never been rigid; there always was, and still is, some variation. Moreover, in recent years there have been some deliberate changes in spelling. The decision I had to make was whether to retain names and spellings as they are found on labels of material in museums, and as they appear in the ornithological literature, or to try to find and use the current spellings, even for places that do not exist any more. My personal preference for the retention of names and spellings as they exist in the literature, has been helped by the fact that only in the concluding period of preparation of this paper did I have access to a gazetteer giving the most recent spelling of Indonesian geographical names. The following list will, I hope, provide a link between past and current spellings.

Java used to be divided into three provinces, conveniently named West-Java, Midden-Java, and Oost-Java; I have retained these names as West, Middle or Central, and East. In addition, there were in Middle Java the socalled Vorstenlanden, the sultanates with their own governments. For some reason one finds on maps only two of them, but actually there were four. Unfortunately, centralism has put an end to self-government with its colorful expression of an ancient culture.

In the following list all the names mentioned in the text are given, as far as possible, with their coordinates and with alternate spellings. For the sake of uniformity, I have resisted the temptation to use for mountains "G." (for Goenoeng or Gunung) and instead used "Mt." When, however, a place name or the name of an estate includes the word, for example Goenoeng Mas, it has been retained, of course and moreover is written in full. I have failed to trace all localities; a few do not appear on any map. M. E. G. Bartels has twice written a list of his collecting localities, but unfortunately neither list is finished; both end in the middle of the alphabet with the letters O and P, so that the great number of names beginning with S and T (in the spelling then current) are excluded. In some cases the location of included names is given with insufficient exactness. For example, Goenoeng Koepak is listed with the description, "Gummiplantage in Nord-Bantam gelegen." No attempt has been made, "to modernize" spellings of the names of estates and plantations not found in recent gazetteers and maps, and which may not exist any more. A particular difficulty is caused by names occurring more than once. For example, the names Tjaringin, Tjiomas, etc., each are found several times in the same general area. About the location of Tjaringin and a few other places, I was advised by Mr. H. Bartels, son of M. E. G. Bartels.

Ajekajek, Ayekayek (Mt.) (Tengger)  $8^{\circ}02' / 112^{\circ}55'$   
 Ardjoeno, Ardjuno, Arjuna, Arjuno (Mt.)  $7^{\circ}45' / 112^{\circ}34'$   
 Argowajang, Argowayang (Mt.)  $7^{\circ}46' / 112^{\circ}25'$   
 Arjuno (Mt.)  $7^{\circ}45' / 112^{\circ}34'$   
 Artjamanik, Arcamanik  $6^{\circ}51' / 107^{\circ}41'$   
 Badioelmati, Badjulmati, Bajulmati  $7^{\circ}56' / 114^{\circ}23'$   
 Bandjar, Banjar  $7^{\circ}22' / 108^{\circ}32'$   
 Bandjaran, Banjaran  $7^{\circ}03' / 107^{\circ}35'$   
 Bandjarhardja, Bandjarardja, Banjararja, Banjarharjo  $6^{\circ}59' / 108^{\circ}59'$   
 Bandjarwangi, Banjarwangi  $7^{\circ}24' / 107^{\circ}53'$   
 Bandoeng, Bandung  $6^{\circ}54' / 107^{\circ}36'$   
 Bantam, Banten, westernmost Residency of Java, sometimes erroneously referred to as the Province of Bantam  
 Banyumas, Banjoemas  $7^{\circ}31' / 109^{\circ}17'$   
 Banyumas, Banjoemas, southwestern Residency of Middle Java, with capital of the same name  
 Banjoewangi, Banjuwangi, Banyuwangi  $8^{\circ}12' / 114^{\circ}21'$   
 Batavia, Djakarta, Jakarta  $6^{\circ}10' / 106^{\circ}48'$   
 Baroekaret (Mt.), not traced, but a Van der Weele locality, hence near Mt. Malabar  
 Besoeki, Besuki  $7^{\circ}45' / 113^{\circ}04'$   
 Betiri (Mt.), 1,228 m  $8^{\circ}25' / 113^{\circ}53'$   
 Blambangan, peninsula forming the eastern extremity of Java  $8^{\circ}42' / 114^{\circ}29'$   
 Bodjonglopang, Djampangtengah  $7^{\circ}03' / 106^{\circ}48'$   
 Boelbanjoe  
 Bogor, Buitenzorg  $6^{\circ}35' / 106^{\circ}47'$   
 Bolang, center of Particulier Land (private estate) of the same name, extending south and east of Djasinga  $6^{\circ}29' / 106^{\circ}30'$   
 Bolang Hilir, southern, lower part of Bolang  
 Buitenzorg, Bogor  $6^{\circ}35' / 106^{\circ}47'$   
 Cheribon, Tjirebon, Cirebon  $6^{\circ}44' / 108^{\circ}34'$   
 Dampar  $8^{\circ}16' / 113^{\circ}43'$   
 Delangoe, Delanggoe, Delanggu  $7^{\circ}37' / 110^{\circ}41'$   
 Depok  $6^{\circ}24' / 106^{\circ}50'$   
 Dieng, Dijeng, Diyeng Plateau  $7^{\circ}13' / 109^{\circ}54'$   
 Djampang Tengah, Djampangtengah, Jampangtengah, Bodjonglopang  $7^{\circ}03' / 106^{\circ}48'$   
 Djapara, Japara, Jepara  $6^{\circ}35' / 110^{\circ}39'$   
 Djasinga, Jasinga  $6^{\circ}29' / 106^{\circ}27'$   
 Djati Nangor, 900 m, tea estate (Preanger)  
 Djocjacarta, Djocjakarta, Djocjokarta, Djogjakarta, Djokdjokarta, Djokjakarta, Djokjokarta, Jogjakarta, Jogyakarta, Yogyacarta, Yogyakarta, capital of Sultanate of the same name  $7^{\circ}42' / 110^{\circ}22'$

Dramaga  $6^{\circ}33'/106^{\circ}43'$   
Drio (Soerabaja), probably Drioredjo, Driorejo  $7^{\circ}21'/112^{\circ}37'$   
Endoet, Endut (Mt.)  $6^{\circ}47'/106^{\circ}40'$   
Gadok, Gadog (Mt. Salak)  $6^{\circ}40'/106^{\circ}43'$   
Gadok east of Buitenzorg  $6^{\circ}39'/106^{\circ}51'$   
Gaga (Krawang)  $5^{\circ}59'/107^{\circ}01'$   
Garoet, Garut  $7^{\circ}13'/107^{\circ}54'$   
Gedangan (Semarang)  $7^{\circ}11'/110^{\circ}41'$   
Gedeh, Gede, Gedee (Mt.)  $6^{\circ}47'/106^{\circ}59'$   
Gobang  $6^{\circ}31'/06^{\circ}39'$   
Goendik, Gundik  $7^{\circ}12'/110^{\circ}54'$   
Goenoeng Koepak (Bantam), a rubber plantation in northern Bantam, halfway  
between Goenoengsari and Tjiomas  
Goenoeng Mas (Poentjak), tea estate near Poentjak/Puncak  
Goenoengsari, Gunungsari  $6^{\circ}10'/106^{\circ}03'$   
Gondang, Kondang  $8^{\circ}06'/113^{\circ}31'$   
Halimoen, Halimun (Mt.)  $6^{\circ}42'/106^{\circ}26'$   
Idjen, Ijen (Highlands)  $8^{\circ}05'/114^{\circ}15'$   
Ijang, Iyang, Hiang, Jang (Highlands)  $7^{\circ}58'/113^{\circ}38'$   
Indramajoe, Indramaju, Indramayu  $6^{\circ}20'/108^{\circ}19'$   
Jakarta, Djakarta, Batavia  $6^{\circ}10'/106^{\circ}48'$   
Jogyakarta, Djocjacarta, etc.  $7^{\circ}42'/110^{\circ}22'$   
Kadengan near Randoeblatoeng  
Kali Boengin (Tjitaroem/Citarum delta)  
Kalogea, a tea estate on the southwestern slope of Mt. Slamat  
Kaliradioet, Zuid Serajoe Gebergte  
Kali Tjiseloeng, east of the Tjitaroem/Citarum delta  
Kapoek, Kapuk  $6^{\circ}08'/106^{\circ}45'$   
Karang (Mt.)  $6^{\circ}16'/106^{\circ}03'$   
Karangbolang, Karangbolong  $7^{\circ}45'/109^{\circ}28'$   
Kawarasan, Kawarasan (Kediri)  $7^{\circ}49'/112^{\circ}07'$   
Kawi (Mt.)  $7^{\circ}55'/112^{\circ}26'$   
Kedangan, see Gedangan  $7^{\circ}11'/110^{\circ}41'$   
Kinderzee, Segara Anakan  $7^{\circ}40'/108^{\circ}50'$   
Klatakan, rubber and coffee estate near Tanggoel, see also next entry  
Klatakan (Kali), near Tanggoel  $8^{\circ}13'/113^{\circ}35'$   
Klatten, Klaten  $7^{\circ}42'/110^{\circ}35'$   
Kledoeng, 1,500 m, in the saddle between Mts. Soembing and Sindoro  $7^{\circ}20'/$   
 $110^{\circ}02'$   
Kletak, 1,830 m (Tengger Highlands)  
Koeningen, Kuningan  $6^{\circ}59'/108^{\circ}29'$

Kole Beres, Koleberes  $7^{\circ}19'/107^{\circ}15'$   
 Krawang  $6^{\circ}20'/107^{\circ}20'$

Laboean, Labuan, Labuhan  $6^{\circ}22'/105^{\circ}50'$   
 Lawang  $7^{\circ}49'/112^{\circ}42'$   
 Lawoe, Lawu (Mt.)  $7^{\circ}38'/111^{\circ}11'$   
 Lembang  $6^{\circ}49'/107^{\circ}36'$   
 Malabar (Mt.)  $7^{\circ}08'/107^{\circ}38'$   
 Manggar (Gedangan)  
 Manglajan (Mt.)  $6^{\circ}52'/107^{\circ}44'$   
 Maribaya near Lembang  $6^{\circ}49'/107^{\circ}40'$   
 Masigit, Massigit (Mt.), ca. 15 km west of Tjibadak, between the plantations  
     Tjiboengoer and Soekamadjoe  
 Meleman  $8^{\circ}18'/113^{\circ}17'$   
 Merbaboe, Merbabu, Merbaboo (Mt.),  $7^{\circ}27'/110^{\circ}26'$   
 Meru, Meroe, mountain range in southeastern Java; its highest point is  
     Mt. Betiri (q. v.)  
 Meru-Betiri, nature reserve in southeastern Java  
 Minggiran (Kediri)  $7^{\circ}44'/112^{\circ}04'$   
 Missigit (Mt.), see Masigit  
 Moeara Gembong, largest, western mouth of Tjitaroem/Citarum  
 Moeara Karang (Tjitaroem/Citarum delta)  
 Moeara Wetan, Moeara Wettan (Tjitaroem/Citarum delta)  
 Moendoe (Mt. Karang)  
 Moerjo, Murjo, Murio, Muryo (Mt.)  $6^{\circ}36'/110^{\circ}53'$   
 Ngadiwono (Tengger)  $7^{\circ}54'/112^{\circ}53'$   
 Ngliron (Rembang)  $7^{\circ}06'/111^{\circ}25'$   
 Ngoelan (Rembang)  
 Nonggodjadjar, Nongkodjadjar, Nongkedjadjar, Nongkejajar  $7^{\circ}54'/112^{\circ}49'$   
 Oedjoeng Koelon, Udjung Kulon, westernmost peninsula of Java, a famous na-  
     ture reserve  
 Oedjoengteboe, 300 m, western slope of Mt. Karang  
 Pakis  $8^{\circ}17'/114^{\circ}21'$   
 Palaboean Ratoe, Pelabuhanratu  $6^{\circ}59'/106^{\circ}33'$   
 Panaitan (Pulau), Prinseneiland  $6^{\circ}36'/105^{\circ}12'$   
 Pandeglang, Pandegelang  $6^{\circ}18'/106^{\circ}06'$   
 Pangerango, Pangrango (Mt.)  $6^{\circ}46'/106^{\circ}57'$   
 Papandajan, Papandayan (Mt.)  $7^{\circ}20'/107^{\circ}44'$   
 Pasir Datar, Pasirdatar, ca. 1,000 m, tea estate on the southern slope of Mt.  
     Pangerango, home of M. E. G. Bartels  $6^{\circ}50'/06^{\circ}54'$   
 Pasir Eurih (Mt. Karang)

Pasir Kananga (Djampang)  
Pasir Lengang (Mt. Karang)  
Pasir Salam (Mt. Karang)  
Pasoeroean, Pasuruan  $7^{\circ}38' / 112^{\circ}54'$   
Patjet, Pacet  $6^{\circ}45' / 107^{\circ}03'$   
Patoeha, Patuha (Mt.)  $7^{\circ}10' / 107^{\circ}23'$   
Poentjak, Puntjak, Puncak, ca. 1,400 m  $6^{\circ}42' / 107^{\circ}00'$   
Poerwakarta, Purwakarta  $6^{\circ}34' / 107^{\circ}26'$   
Poerwokerto, Purwokerto  $7^{\circ}25' / 109^{\circ}14'$   
Pondok Tissok  
Prahoe, Prahu, Perahu, Praoe (Mt.)  $7^{\circ}12' / 109^{\circ}55'$   
Prinseneiland, Pulau Penaitan  $6^{\circ}36' / 105^{\circ}12'$   
Pulau Duwa, P. Dua, P. Doeä, nature reserve in the Bay of Bantam  
Randoeblatoeng, Randublatung  $7^{\circ}12' / 111^{\circ}23'$   
Raoeng, Raung (Mt.)  $8^{\circ}08' / 114^{\circ}03'$   
Rawah Boeaja near Batavia  
Rawah Boender near Soerabaja  
Rembang  $6^{\circ}42' / 111^{\circ}20'$   
Renteng  $7^{\circ}52' / 113^{\circ}28'$   
Salak (Mt.)  $6^{\circ}42' / 106^{\circ}44'$   
Samboengredjo, Sambungredjo  $7^{\circ}24' / 111^{\circ}50'$   
Sapoeran (Bagelen), Sapuran  $7^{\circ}28' / 109^{\circ}58'$   
Segara Anakan, Kinderzee  $7^{\circ}40' / 108^{\circ}50'$   
Semarang  $6^{\circ}58' / 110^{\circ}25'$   
Semplak  $6^{\circ}33' / 106^{\circ}45'$   
Seneng (Semarang)  
Serajoe, Serayu (Mts.), in southern Middle Java  
Sidoardjo, Sidoarjo  $7^{\circ}27' / 112^{\circ}43'$   
Sikatok (Mt. Sindoro)  
Sindoro, Soendoro (Mt.)  $7^{\circ}17' / 109^{\circ}59'$   
Sint Nicolaaspunt, Tanjung Pujut  $5^{\circ}52' / 106^{\circ}02'$   
Sitoë Palahlar, near Tjibaroesa  
Slamat, Slamet (Mt.)  $7^{\circ}14' / 109^{\circ}12'$   
Sodong Jerok, Sodong Gerok, 1,170 m (Idjen)  
Soebang, Subang  $6^{\circ}34' / 107^{\circ}45'$   
Soekaboemi, Sukabumi  $6^{\circ}55' / 106^{\circ}46'$   
Soekamadjoe, estate near Mt. Masigit (q. v.)  
Soekowono, Sukowono  $8^{\circ}03' / 113^{\circ}50'$   
Soemberredjo, Sumberrejo  $7^{\circ}10' / 112^{\circ}00'$   
Soember Wringin, Sumberwringin (Idjen)  $7^{\circ}59' / 113^{\circ}59'$   
Soembing, Sumbing (Mt.)  $7^{\circ}23' / 110^{\circ}04'$

Soerabaja, Sourabaya, Surabaya  $7^{\circ}15'/112^{\circ}45'$   
 Soerakarta, Surakarta  $7^{\circ}35'/110^{\circ}50'$   
 Solo, alternate name for Soerakarta  $7^{\circ}35'/110^{\circ}50'$   
 Surabaya, Soerabaja  $7^{\circ}15'/112^{\circ}45'$   
 Surakarta, Soerakarta  $7^{\circ}35/110^{\circ}50'$   
 Tamandjaja, village a few kilometers east of Udjung Kulon  
 Tamansari, Tamansuruh, 500 m (Idjen)  $8^{\circ}12'/114^{\circ}17'$   
 Tambi  $6^{\circ}28'/108^{\circ}20'$   
 Tandjong Bantenan, Tanjung Bantenan  $8^{\circ}47'/114^{\circ}33'$   
 Tandjong Pasir, Tanjungpasir  $6^{\circ}01'/106^{\circ}46'$   
 Tandjong Priok, Tanjungpriok  $6^{\circ}06'/106^{\circ}53'$   
 Tandjong Tjerdeng (Oedjoeng Koelon)  
 Tanggoel, Tanggul  $8^{\circ}10'/113^{\circ}26'$   
 Tangkoeban Prahoe, Tangkubanperahu (Mt.)  $6^{\circ}44'/107^{\circ}36'$   
 Tapos (Mt. Pangerango)  $6^{\circ}42'/106^{\circ}52'$   
 Telagabodas (Mt.)  $7^{\circ}14'/108^{\circ}03'$   
 Telaga Warna  $6^{\circ}42'/106^{\circ}59'$   
 Telomojo, Telomoyo (Mt.)  $7^{\circ}22'/110^{\circ}24'$   
 Tengger (Highlands)  $7^{\circ}55'/112^{\circ}55'$   
 Tirtasari near Bandjaran  
 Tjabang Tempajan (Krawang), Tjitaroem/Citarum delta  
 Tjaringin, lower slope of Mt. Gedeh, southwest of Pasir Datar  
 Tjepoe, Tjepu, Cepu  $7^{\circ}09'/111^{\circ}35'$   
 Tjermai, Tjerimai, Tjareme, Tjiremai, Tjiremaj, Ciremay, Cereme (Mt.)  
 $6^{\circ}54'/108^{\circ}24'$   
 Tjerme (Tjepoe)  
 Tjibadak, Cibadak  $6^{\circ}53'/106^{\circ}46'$   
 Tjibaloeng near Tjaringin  
 Tjibarennno, Cibareno (Wijnkoopsbaai)  $6^{\circ}59'/106^{\circ}23'$   
 Tjibaroesa, Tjibarusa, Cibarusa  $6^{\circ}26'/107^{\circ}04'$   
 Tjibening  
 Tjibeureum  $7^{\circ}10'/107^{\circ}33'$   
 Tjibitoeng  
 Tjibodas, Cibodas (Mt. Gedeh)  $6^{\circ}45'/107^{\circ}01'$   
 Tjiboengoer, Cibungur  $6^{\circ}46'/107^{\circ}18'$   
 Tjibunar, east of Udjung Kulon  
 Tjidjengkol, Cijengkol near Bandoeng  $6^{\circ}40'/107^{\circ}37'$   
 Tjidjoengdjoeng near Buitenzorg  
 Tjiharoes, Ciharus  $7^{\circ}10'/107^{\circ}45'$   
 Tjihea, Cihea  $6^{\circ}54'/107^{\circ}16'$   
 Tjikao, Cikao  $6^{\circ}20'/107^{\circ}23'$

Tjikoeraj, Cikuray (Mt.)  $7^{\circ}19'/107^{\circ}52'$   
Tjilameta (Mt. Tangkoeban Prahoe)  
Tjilatjap, Cilacap  $7^{\circ}44'/109^{\circ}00'$   
Tjiledoek, Tjiledoeg  $6^{\circ}54'/108^{\circ}44'$   
Tjiletoe, Tjiletoeh, Tjiletuh, Ciletuh  $7^{\circ}11'/106^{\circ}27'$   
Tjimadja, Cimaja  $6^{\circ}57'/106^{\circ}2'$   
Tjimanjau east of Bandoeng, 850 m  
Tjimanoek, Cimanuk, large river in northeastern West Java  
Tjinjiroewan, Tjinjiroean, Tjinjiruan, Cinyiruan (Mt. Malabar)  $7^{\circ}10'/107^{\circ}36'$   
TjiOdeng, about one kilometer west of Pasir Datar  
Tjiomas (Mt. Karang)  $6^{\circ}12'/106^{\circ}01'$   
Tjiomas, not traced, a Van der Weele locality and, therefore, presumably in the vicinity of Mt. Malabar  
Tjipanas near Garoet  $7^{\circ}10'/107^{\circ}52'$   
Tjipetir (Preanger)  $6^{\circ}52'/106^{\circ}41'$   
Tjiplokan, Soemberdjo  
Tjisaroeni, Tjisaroni, Cisaroni  $7^{\circ}22'/107^{\circ}44'$   
Tjitamijang, Tjitamiang  
Tjokondang near Soebang  
Tosari, Tozari  $7^{\circ}53'/112^{\circ}54'$   
Udjung Kulon, Oedjoeng Koelon (q. v.)  
Wajang, Wayang (Mt.)  $7^{\circ}12'/107^{\circ}38'$   
Wilis (Mt.)  $7^{\circ}50'/111^{\circ}45'$   
Wonosalam  $7^{\circ}42'/112^{\circ}21'$   
Zuid Serajoe Gebergte, see Serajoe



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